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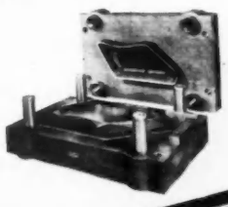

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AUTOMOTIVE INDUSTRIES
VOLUME 62 *Philadelphia, Saturday, March 22, 1930* NUMBER 12

Trend Toward *Exclusive Dealerships Pronounced* in Five Years

Multiple representation decreases as number of individual manufacturers declines, while remaining factories broaden basic price ranges to supply demand.

By LESLIE PEAT

DURING the past four years there has been a steady trend toward exclusive automobile dealerships in the United States. This has been general in the large cities, but during the past two years, and in 1929 particularly, exclusive dealers have been replacing multiple-make dealers in the larger and medium-sized towns throughout the country. Since 1926, exclusive dealerships have risen from 69 per cent to 80 per cent of total dealer representations. In 1929, exclusive dealerships gained 1002 and multiple dealerships dropped 475. Practically all of this change in type of representation last year was in cities of 100,000 or less.

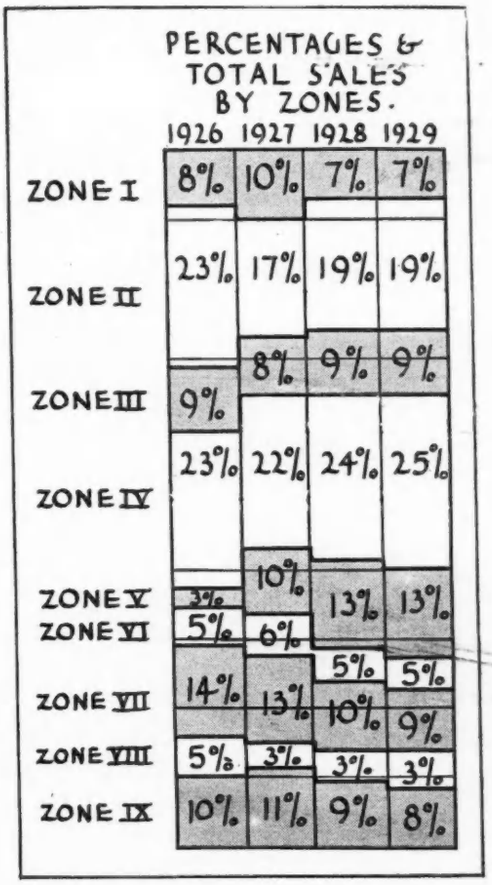
Figures from cities of 100,000 and over showed practically no change in 1929 in the percentages of single-dealer and multiple-dealer representations, as compared with the 1928 figures. The largest shift toward exclusive dealerships occurred in the Eastern States last year, although California showed a slight shift in this direction, according to the Chilton Class Journal Company Trade List count.

Because a larger number of automobile manufacturers ceased manufacturing during the past decade, remaining manufacturers have widened their price ranges to supply the demand for cars priced at many base figures. This tendency, especially in the past five years, has reduced the number of dealers who, before that period, felt it necessary to have more than one make of automobile to satisfy his prospects in regard to price and performance.

A larger number of dealers were in business in 1929 than in 1928, contrary to general belief. An increase of one-half of one per cent over the 1928 total brought last year's passenger car dealer count to 52,588.

Although the major portion of the shifting from multiple to single dealerships was done in the Ford and Chevrolet dealerships, the percentage changes were normal as compared with other groups of cars. The Ford and Chevrolet dealer representations, taken as a group, showed an increase from 12,324 exclusive dealerships in 1928 to 13,673 in 1929 and a decrease from 5394 multiple-dealerships in 1928 to 4478 in 1929, a drop of 916 dealers who handled either of these makes and one or more other makes of passenger cars. The high-priced bracket, composed of Cadillac, Franklin, Locomobile, Packard, Pierce-Arrow and Stutz, showed practically no shifting from or to exclusive dealerships, as compared with the previous year. Lincoln dealers were omitted because of the Ford-Lincoln dealer arrangement. Because certain of the basic data compiled for this study are estimated, the computations are, to some degree, approximate.

Average sales per dealer gained 30 per cent in the United States in 1929, as compared with 1928. The average number of retail sales last year was 81 each for the 52,588 dealers in the 48 states and the District of Columbia; in 1928, 51,440 dealers sold



See key map for zones, page 465

Dealers and Sales

	1926	1927	1928	1929
Ford and Chevrolet dealers	12,780	13,845	17,668	19,261
All other dealers	38,088	47,841	33,772	33,327
Total dealers	50,868	61,686	51,440	52,588
Ford and Chevrolet sales	1,682,856	1,041,234	1,249,211	2,090,111
All other sales	1,730,509	1,660,080	1,973,681	1,921,889
Total sales	**3,413,365**	**2,701,314**	**3,222,892**	**4,012,000**
Average sales for Ford and Chevrolet dealers	122	75	75	115
Average sales for all other dealers	52	37	52	49
General average sales per dealer	**87**	**56**	**63**	**82**
Percentage of total sales for Ford and Chevrolet dealers ...	70%	67%	59%	70%
Percentage of total sales for all other dealers	30%	33%	41%	30%

3,222,892 automobiles, an average of 63 retail sales per dealer. Dealers sold 62 cars each per year, or an average from 1926 to 1929.

Dealers handling makes other than Ford or Chevrolet sold three units less, on an average, in 1929 than they did in 1928. Last year the dealer average, excluding Ford and Chevrolet, was 49 cars per dealer, as compared with 52 cars per dealer in 1928. Ford and Chevrolet dealers, as a group, showed a gain of 40 cars each, on an average, selling 115 in 1929 and 75 in 1928. This gain brought the average for all dealers in the country up to 81 in 1929, in spite of the average in this grouu of states was 79 cars per dealer. of automobiles other than Ford and Chevrolet.

Public acceptance of passenger cars in the United States —that is, the ratio of sales to registrations— reached 17 per cent in 1929, a gain of nearly 14 per cent over the 1928 ratio. During the past four years, this ratio has been about 16 per cent, on an average, reaching 21 per cent, the highest point in the last decade, in 1926. It is interesting to note that regardless of the wide differences of the average sales per dealer over the four-year period, and the differences in percentages of total sales, the ratio of sales to registrations holds closely to this average. Only when a serious sales slump was felt in some section, did this ratio diminish to any great degree.

This ratio of sales to registration showed the sharpest increase in the East North Central Zone, gaining nearly 5 per cent in 1929, as compared with the four-year average. A total of 1,010,700 sales in this zone during the past year was 18 per cent of the total registrations for these states last year. This zone (IV) is composed of Ohio, Indiana, Michigan and Wisconsin.

Over the four-year period the New England group (Zone 1) of six states showed the highest acceptance ratio. Here sales averaged 20 per cent of the yearly registrations, ranging from 17 to 24 per cent. As in most zones, the high level was reached in 1926 with 24 per cent, but unlike other zones, the ratio in these states failed to drop more than one point in the 1927 sales depression.

Sales per dealer in 1929 reached 81 on an average, taking the United States as a whole. The East North Central States of Ohio, Indiana, Illinois, Michigan and Wisconsin, showed the largest sales per dealer with 99 units. This was a gain of 35 units or 54 per cent over the sales each dealer made, on an average, in 1929, and more than twice as many per dealer as were sold in 1927, the low point of the four-year period. An average of 67 cars per dealer was sold in this zone for the four years.

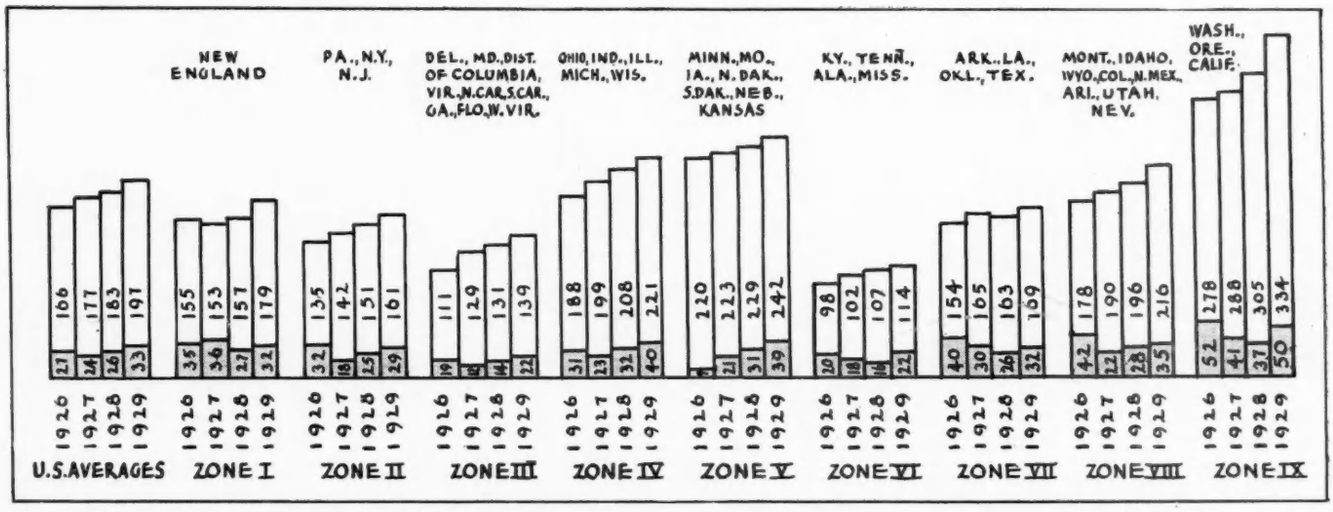
Zone VII, Arkansas, Louisiana, Oklahoma and Texas, showed the second highest average sales per dealer in 1929, with 94 cars apiece. This was 15 more cars sold by every dealer, on an average, or an increase of approximately 20 per cent. The four-year average in this group of states was 79 cars per dealer.

The three Pacific Coast States (Zone IX) showed a sales gain of 21 units per dealer on an average in 1929 as compared with 1928, a gain last year of 28 per cent over the preceding year, and 22 per cent over the four-year average of 76 cars per dealer for this zone.

States in Zone V, Minnesota, Missouri, Iowa, North Dakota, South Dakota, Nebraska and Kansas showed the lowest average of sales per dealer for the four-year period, with 31 units per dealer.

Over the four-year period from 1926 to 1929 nearly 25 per cent of all automobiles sold were handled by dealers in the East North Central Zone, composed of

Passenger Car Registrations and Sales Per 1000 Population



Total passenger car registrations (shown in white) and new car registrations, which approximately represent 1929 sales (shown in shaded bars), graphically indicate the trend of registrations per 1000 population for the past four years

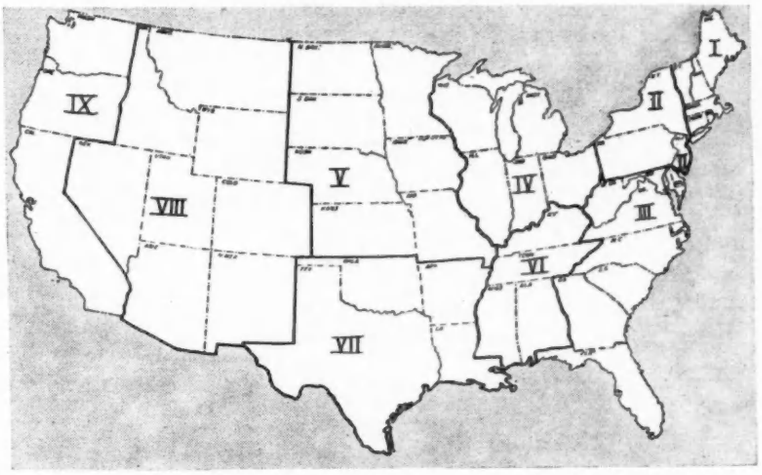
Ohio, Indiana, Illinois, Michigan and Wisconsin, an area which contained approximately 21 per cent of the total population of the United States. Last year retail car sales for this zone averaged 99 per dealer, or 22 per cent more than the average number of sales per dealer for the country as a whole.

Sales per 1000 population averaged 30 passenger cars for the United States for the four years, ranging from 24 units in 1927, the lowest, to 33 cars in 1929. The average sales in 1926 were 27 units per 1000 population, dropping 3 units in 1927 and showing gains of 2 cars per 1000 in 1928 and another gain of 8 units last year.

The Pacific Coast group of California, Oregon and Washington averaged 45 cars sold per 1000 population for the four years, and reached 50 units in 1929. The highest number of cars sold per 1000 population during the four years was sold in these states in 1926, when 52 units were reached. This was 25 cars, or 94 per cent more than the 1926 average for the United States as a whole. The New England States showed an average of 33 cars sold per 1000 population for the four-year period.

The lowest sales per 1000 population were in Zone III, the South Atlantic group. Sales averaged 17 for the four years, and dropped to 12 automobiles per 1000 population in 1927, a drop of 12 units, or 50 per cent, as compared with the 1927 average, and a drop of 7 units as compared with the 1926 average for the zone.

From 1926 to 1929, the registrations in the Pacific Coast States rose from 278 to 334 per 1000 population, an increase of 56 units, or a gain of 20 per cent, on an average, as compared with a gain of 18 per cent in the United States as a whole.



Key map, showing zone areas as used by the government in census studies. These zones were chosen to obtain the maximum of simplicity in the presentation of this study

Competent Source

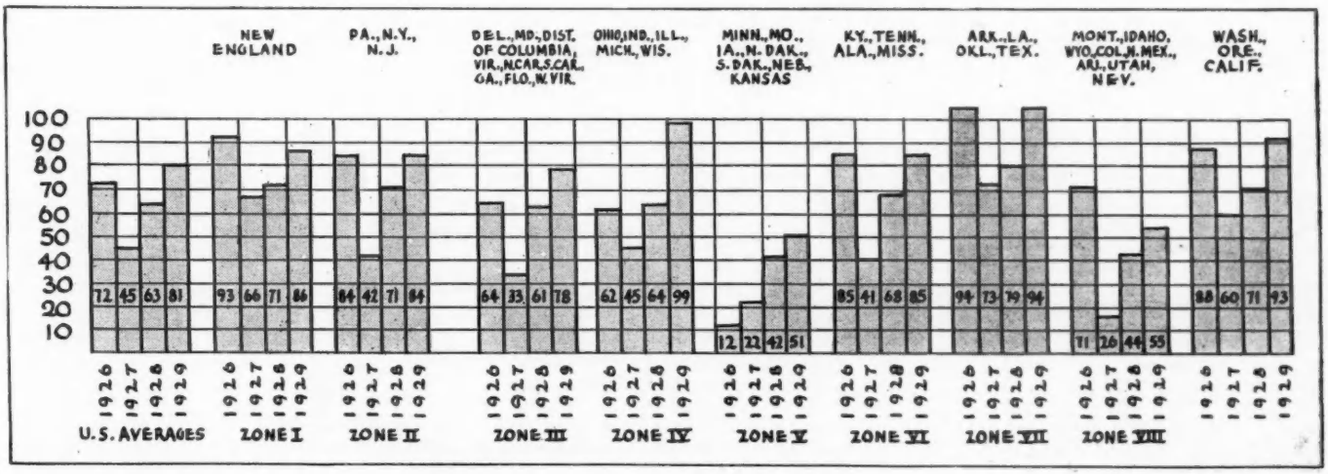
THIS analysis of dealerships was made possible by the Chilton Class Journal Company Trade List, a compilation kept up to date for the Direct Mail division of the company. More than 75 persons are employed in checking, tabulating and correcting names and addresses of approximately 127,000 dealers, wholesalers and manufacturers in the automotive industry, supplying the most complete service of this type extant.

During 1927, when sales per dealer slumped 37 per cent from the 1926 average, this zone suffered a drop of only 25 per cent per dealer, on an average, the smallest percentage of decrease in sales per dealer in the country, with the exception of the West South Central territory (Zone VII) embracing Arkansas, Louisiana, Oklahoma and Texas.

The second largest sales zone for the four-year period was the Middle Atlantic group (Zone II), composed of New York, New Jersey and Pennsylvania. Nearly 20 per cent of all automobiles sold since 1926 were handled by dealers in this zone, which had a population which averaged about 21 per cent of

(*Continued on page 487*)

Average Sales Per Dealer for All Makes of Passenger Cars



Sales per dealer by years are shown in this chart. These averages are based on total sales of all makes and the total number of dealers for the respective years. The group to the extreme left shows the United States averages for the past four years

Handling of *Materials* and Frame Are *Automatic* at Smith Plant

Under pressure of necessity, the inventive skill of the organization has constructed a wide variety of devices. Almost every type of conveyor is used.

ABOUT 25 years ago A. O. Smith Corp. built the first pressed steel frame in America. It is also significant that this company conceived and built the only automatic frame plant in the world, which was completed in 1920, after five years of intensive engineering and research development. The technical staff of the company designed, developed, as well as supervised, the building and erection of the entire plant, and work on refinements and improvements are still carried on. Today every operation from raw stock to the finished frame, including nearly all handling, is done with automatic machinery.

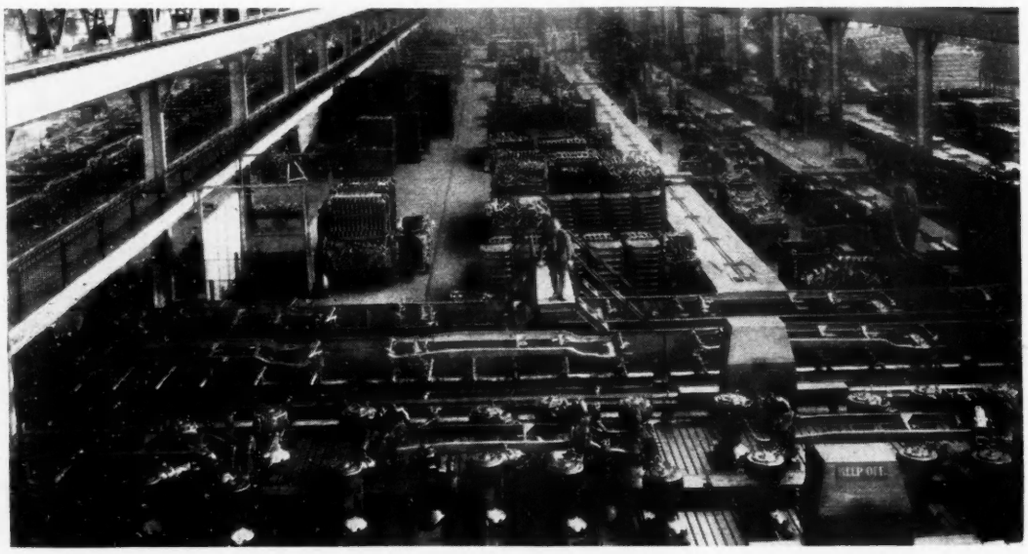
The automatic frame plant is divided into two main portions, the storage building in the rear and the manufacturing building. In the former is storage space for 50,000 frames as well as 50,000 tons of raw material. Here the raw stock is also received, inspected and pickled; furthermore, the assembled frames return here to be washed, painted and dispatched either to storage or shipping platforms. The other main portion—the manufacturing building—houses the bulk of automatic machinery. The actual work is done on the second floor, while the drive and auxiliary equipment extends down to the ground floor.

The strip steel, made to exacting specifications, is picked up from the cars with monorail cranes and run through an inspection machine at the rate of 900 pieces per hour; being straightened, the length, width, thickness and curvature of the strips checked and any piece found defective automatically thrown out, and the O.K.'d blanks delivered in piles to monorail cranes, which move them on to the pickling machine.

Here the steel is placed in special crates of 5-ton capacity, which are handled through the different baths by means of a crane operated with remote control. Following pickling, the stripstacks are again picked up by monorail cranes and moved into the manufacturing building at the feed-ends of the two main lines.

Two major types of parts go to make up a frame; side rails and cross-members. Due to their different peculiarities and lengths they each have separate systems of machinery leading to the far end of the building where one large unit takes care of the general assembly of the frame.

Let us first follow the side rails. The pickled steel passes through the side bar press line with its four operations entirely handled by conveyors. First the straight strip is "kicked up" edgewise in order to follow the desired contour of the side rail. Next the numerous rivet holes and other openings are pierced, requiring separate presses for the right and left-hand rails. This is followed by a single blanking press which trims the outline of the blanks, whereupon two more presses take care of the forming operation, folding up of flanges to obtain the conventional channel section. The feeding and unloading of each of these presses is done entirely automatically, and all these many movements are timed and synchronized into a single unit, which does not require manual labor at any point.



The general assembly line at the A. O. Smith plant in Milwaukee. The cross-bar lines are in the background

Before the side rails can be assembled into a frame, a number of spring hangers, brackets and other attachments must be riveted on; the ends must be clipped off for accuracy and certain holes pierced, which must come very close. All this is done in the unit called the side bar parts assembly. Right and left-hand bars are

Manufacturing *Process*

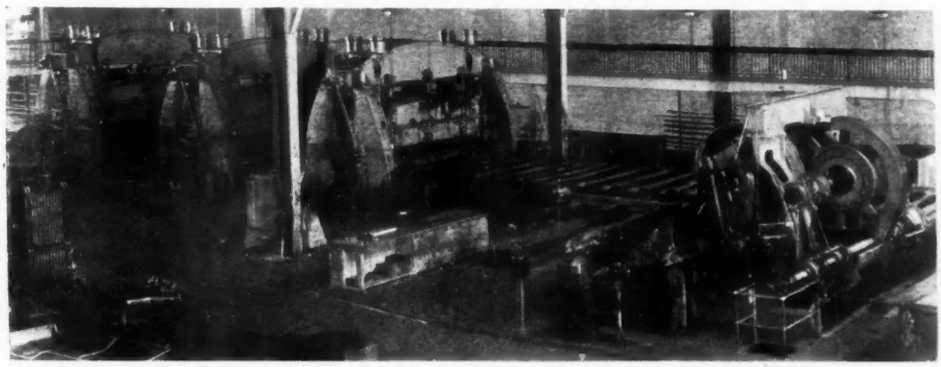
By A. W. REDLIN
Assistant Works Manager, A. O. Smith Corp.

handled in pairs simultaneously, and are loaded onto trucks automatically. The finished side bars are automatically removed from the trucks at the end and inspected before being delivered to the adjacent general assembly unit.

Going back to the point where the strip steel enters the manufacturing building, the stacks, meant for cross-members, are deposited by the monorail cranes at the loading ends of four cross-bar finishing lines. Each of these is equipped with blanking, piercing and forming presses, very similar although smaller than corresponding machines for the side bar press line, described above. Like them, the cross bar presses are fed automatically and all handling is done with automatic machinery, and following the press-line is a conveyor which has a purpose similar to the above-mentioned side bar parts assembly line. However, much less work has to be done on cross bars, requiring porportionally less space. At the end, the finished cross bars arrive at the general assembly unit like the side bars.

The general assembly unit performs two important functions and does both entirely automatically. It collects all the required parts for the frame, assembles them, and puts in all the rivets, finally "setting" each rivet by forming the rivet heads. One conveyor system with trucks takes care of the first function, a so-called "nailing machine" assembles the frame and puts in the rivets, while another conveying system equipped with other trucks handles the last function—the riveting. All three sub-units are synchronized and operated with one single motor.

Castings are machined complete at one setting, at the rate of 450 per hour, in the above automatic spring hanger machine at the A. O. Smith frame plant



The first four presses in the side-bar press line

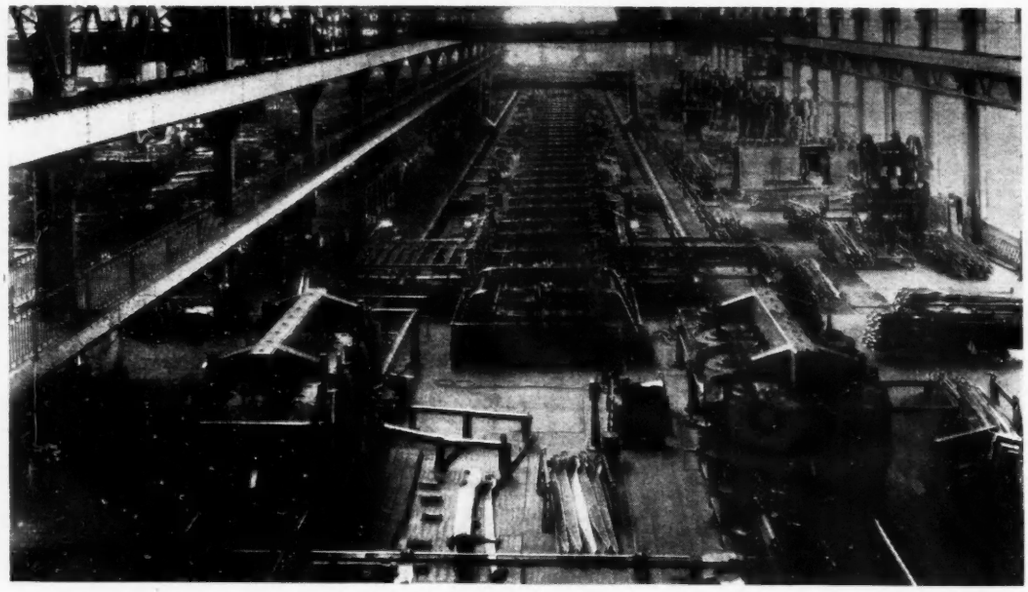
When the frame is stripped off its truck at the discharging end it is finished and ready to leave the manufacturing building. On a conveyor, running the full length of the building it travels back to the storage building; while on the way it is carefully inspected and if any part is wrong it is side-tracked on a special repair line and then sent on its way again.

Arriving in the storage building it first has to pass through a washing machine where grease, dirt, etc., is removed in a special automatic machine—clean and dry it lands right at the painting machine.

Hung, one close to the other on an endless chain, the frames slowly pass through this giant machine where special priming paint is sprayed on at the rate of 750 gal. per minute. They pass through an oven, baking the paint, then through cooling chambers, emerging after 40 minutes as a finished product, and ready for delivery to the customer.

Almost every conceivable type and design of conveyor is used in this automatic plant. Under the pressure of necessity, inventive skill has here brought out a variety of material-handling devices. Many old and approved means were utilized, but in addition a great many entirely new devices were invented.

The common reciprocating rail feeder found use in many instances as for the inspection machine, the side bar and cross bar press lines. However, it appeared in many new and clever applications. Almost invariably cams were employed for their drive, since intricate timing had to be followed. On most of these feeders it was sufficient to use gravity dogs, one set moving and another stationary. One high-speed conveyor, however, had to be equipped with positive disappearing dogs necessitating one added motion. Adjustable end-guards took care of guiding the blanks and, as on nearly every type of feeder, safety devices were provided, which



Automatic forming presses, seen in the foreground, are essential to the speed required in the side-bar parts assembly line at A. O. Smith Corp. factory

automatically stops the whole unit in case anything goes wrong.

A very interesting solution of a feeder problem is a double reciprocating overhead carriage operated with wire ropes for the feeding and unloading of the offsetting press. This device picks up the steel strip with magnets and does a perfect job at very high rates of speed.

Another clever device feeds and unloads the forming presses. It has disappearing fingers which simultaneously pick up a blank from the cross conveyor underneath and a finished side bar in the press; then rushes 20 ft., stops, and deposits the bar in a crate and the blank in its exact position on the forming die. Split seconds and perfect timing are absolutely essential here and it is well safeguarded by sensitive electrical devices.

Feeders and such devices are, however, to be found in many plants and in connection with many machines, but entirely new problems faced the designers of the side bar parts assembly line. Thirty-eight trucks, each one a machine in itself, with four smaller carriages, had to be put through their spaces according to a very difficult timing diagram. Swift movements, sudden and accurate stopping and starting of such great masses involved staggering loads and inertia. Enormous cams operate this machine, and powerful balancing devices are provided to absorb the suddenly released energy. Running on rails, the trucks advance intermittently on an upper level. At each station the trucks are doweled, the smaller carriages are simultaneously released, thrust out two to each side and also doweled, thus carrying the side rails, to be worked on, into the waiting machines. These quickly perform their work; the carriages retreat and the trucks advance to the next station where the same cycle is again repeated—each consuming a total of but 8 seconds. At the end of the line, truck after truck is unloaded and lowered onto the return tracks on the lower level, where a screw-like device propels them back to the starting end at uniform speed. Raised to the upper level by means of an elevator they receive new loads and repeat the performance.

In magnitude and complexity it has nothing on the next unit—the general assembly. Here are two track systems with trucks combined into one unit, weights are still greater, and the assembling and nailing machine adds to make this one of the most complicated machines to be found any place. The powerful drive, with its string of enormous cams, resembles that of the preceding unit. In one respect, however, this unit presents a new angle of conveying. Unlike the previous unit, the work is not brought up to the machine, but the frames, now assembled, stay on the trucks while the machines are brought to the work. This is accomplished by having the riveting machines mounted on platforms, provided on each side of each truck line. A stationary steel floor over the platforms makes it possible for the men to walk around among the individual machines. The procedure is then for the trucks to run intermittently, stopping for a given length of time at each station. Here the truck with the frame on it is lifted up on dowels, the riveting machines advance from each side, carried on the platforms, and perform their work of setting the rivet heads. Very ingenious heads were invented, which enable us to set any rivet, no matter how it is located, with a few standard types of machines. After the work is done the jaws of the machines open up, the machines retreat, and the trucks then advance another step and the whole performance is repeated.

It takes 50 minutes to actually manufacture a frame in the automatic plant. An added 40 minutes is consumed in cleaning and painting the frame before it is ready to be shipped. This makes a total of 1½ hours for the entire fabrication process.

The manufacturing building has a productive capacity of 450 assembled frames per hour, and in order to supply parts, each unit preceding the general assembly has a capacity of 450 pieces per hour. For similar reasons it is necessary to have the same capacity for the raw material handling machines. Thus the inspection machines can handle 900 strips per hour, the pickling machines upward of 1100 tons of steel per day, and finally the painting machine can turn out 450 frames per hour.

Fully automatic production is already common practice in bulk manufacturing. What our company has accomplished shows that the principle can be applied successfully and on a large scale to assembly operations. If our experience is any guide, a more complete use of machinery for all routine operations and the handling of materials is not only possible but also very profitable.

A PAMPHLET on "Kolben im Fahrzeugbau" (Pistons in Motor Vehicle Production) has been published by the Verlag Deutsche Motor-Zeitschrift, Dresden, Germany, the author being Dipl.-Ing. Ernst Mahle, Stuttgart. It discusses the problems of piston design in a general way and shows photographic illustrations of numerous types. Cylinders, rings, piston pins and lubrication are also discussed.

Automotive Stock Distribution Increases 85 Per Cent

Individual ownership of motor securities larger since 1929, with more buyers reported since the market debacle of November. Growth still evident.

By A. B. CROFOOT

JOHN DOE, who has saved up a few hundred dollars which he wishes to invest profitably, has evidently felt that the automotive industry at present offers perhaps a sounder investment, and one more likely to yield a profit, than some of the other industrial stocks. At least that seems to be a safe assumption, if we can accept the evidence of the manner in which he has been purchasing motor securities during the past twelve or fifteen months.

The accompanying figures show the increase in the number of stockholders in a number of the leading automobile manufacturing companies since the beginning of the year, and tend further to emphasize the fact that that increase has been particularly marked since the break in security prices last October and November. From an analysis of these figures it appears that we are safe in assuming that an increasingly large number of people consider the industry a good investment, and have seen fit to take advantage of the lower prices following the Wall Street debacle to invest their money in what they consider a good buy.

Roughly, it appears from these figures that there are today from 125 to 130 per cent more people owning stocks in automobile manufacturing companies than there were at the beginning of last year. There was an increase during the year 1929 of about 85 per cent, more than half of which took place during the last two months of the year; in other words, following the stock market crash which deflated fully speculative interest.

Specifically, the eight companies for which figures for the complete year 1929 are available show an increase in number of stockholders of 85 per cent during the year. The nine companies listed show an crease during the two-month period following the break of 50 per cent, proving conclusively that most of 85 per cent increase during the year took place during those two months. The six companies for which figures are available this year, show a total increase since the first of last year of 127 per cent.

Of course, it must be borne in mind that not all of the apparent growth since the first of November is due to new investors coming into the field. As is clearly shown in the Packard figures, which cover that period in considerable detail, there was a marked increment during the actual period of the crash. But the fact that the increase in number of stockholders has continued even since the first of the year demonstrates that the public has become more interested in automotive stocks.

Comparing the automotive situation with the general industrial situation, we find that the increase has been more marked in this field than in the general field. B. C. Forbes, in his magazine for February 15, shows the increase in stock distribution in a general way, and he found then that over the past year there had been an increase in the number of stockholders in 19 industrial concerns, of which five were automobile manufacturers, of 67 per cent, as compared with an increase during 1929 of 85 per cent in the automobile manufacturers listed in the table accompanying this article. Mr. Forbes found an increase in the number of stockholders in 19 public utilities of 47 per cent.

In considering the Packard figures, some consideration might be given to the fact that this company split its stock in August, giving five new shares for each old share. This bringing the price of its securities down within the range of the small investor doubtless had its effect on the increase in the number of stockholders, but the Packard experience is by no means out of line with the experience of those companies whose stocks are listed on the same basis as they were a year ago. The General Motors split-up antedated the stock market break of last October and November sufficiently so that it can hardly have any bearing on this particular development.

While it is impossible to arrive at an accurate estimation of the size of the average block held per individual, due to the extremely large holdings of certain men closely connected with the various companies, it seems fairly certain that the average holdings in most of the companies could be estimated conservatively below twenty-five shares per individual.

Stock Distribution List

Company	Jan. 1, 1929	Nov. 1, 1929	Jan. 1, 1930	Latest
Chrysler (1) ...	21,000	25,545	36,119	....
General Motors .	105,363	140,113	198,600	240,483
Hudson (2)	2,616	3,945	5,800	6,500
Hupp	4,336	10,233	12,217	13,119
Mack (6)	5,061	5,696	7,015	7,387
Packard (3)	22,000	24,000	54,990	60,000
Reo (4)	....	9,750	12,255	....
Studebaker (5) .	17,154	22,512	26,441	27,401
Willys	13,458	17,790	22,646	....
Totals ...	**190,988**	**259,584**	**376,083**	**354,890**

Notes:

(1) Chrysler figures around stock break are for Sept. 3 and Dec. 2, respectively.

(2) Hudson figure preceding break is for Oct. 1; latest Jan. 16.

(3) Packard records follow: Aug. 31, '29, 22,000; Oct. 31, 24,000; Nov. 15, 30,000; Jan. 1, '30, 54,990. Figure of more than 60,000 reported about Feb. 15.

(4) Reo figures around break are for Sept. 10 and Dec. 10, respectively.

(5) Studebaker records in detail follow: Dec. 31, '28, 17,154; Feb. 9, '29, 16,082; May 10, 18,358; Aug. 10, 20,051; Nov. 9, 22,512; Dec. 31, 26,441; Feb. 10, '30, 27,401.

(6) Mack latest figure is as of Feb. 28.

Riding Qualities of Automobiles

Attainment of a higher degree of reversal of present practice in de Warren Watson indicates in a talk

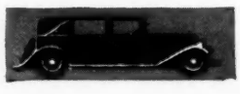
"HOW to Design for a Good Ride" was the subject of a talk before the S.A.E. Pennsylvania Section on Wednesday of last week, the speaker being John Warren Watson, the well-known manufacturer of stabilators. Mr. Watson started by remarking that in connection with a subject of this kind, it is almost impossible for a man to say what he believes without treading on the toes of other men who—for business or other reasons—hold different beliefs. "However, when an engineering society, such as the S.A.E., does a man the honor to ask him to get up before one of its meetings to tell what he knows about a given subject, it seems he has no alternative but to state facts as he sees them and to call a spade a spade.

"I have been repeatedly urged by the society to get up before one of its meetings and tell, based upon my experience, how I would go about the matter of designing for an easy ride. I hope that what I may be able to say may prove of some value to the S.A.E. and to the automotive industry in helping to put riding quality more nearly on a par with today's excellence of car performance in other respects. That hope, and that hope alone, will be back of everything I say."

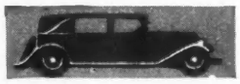
Mr. Watson explained the usual procedure in working out the suspension of a car. When the control-device specialist is called in, the engineer, as a rule, has already designed the springs, and the control-device man is asked to make the car ride well. In some cases this is possible, in others it is not. This appears to be the wrong way of going about it, for although the springs are almost entirely responsible for the way a car rides, the control mechanism adopted determines what kind of springs can be used. For this reason the car manufacturer should first select the type and make of shock absorber he wants to use and then design the springs according to the adequacy, or otherwise, of the shock absorbers.

Shock Absorber First

PRESENT methods of design require the selection of spring control device after the suspension has been approved. This appears to John Warren Watson to be the wrong way of going about fixing the riding qualities of a car, as the control mechanism of shock absorbers determines what kind of springs can be used.



If the shock absorbers are weak in resisting rebound, springs cannot be employed which rebound excessively. This means that the springs must be stiff in order to avoid, as far as possible, action and corresponding reaction. This, of course, makes for a car which will be very uncomfortable to ride in. On the contrary, if the shock absorbers are of ample capacity, springs may be employed which act freely and which without the shock absorbers would rebound violently. The shock absorbers will control their action on rebound and the ride will be perfectly controlled, and, at the same time, soft and comfortable.



This leads to the question of what is a stiff spring and what is a soft spring. A little reflection will show that we are not really concerned with the absolute stiffness or softness of the springs, because a spring that would be considered stiff on a light car would be considered soft on a heavier car. What we are interested in directly is the period of vibration of the assembled job, which is determined by the stiffness of the spring and the weight it is carrying. A given spring will have a higher rate of vibration when it supports a light weight than when it supports a heavy weight.

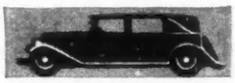
The thing that makes a car comfortable or otherwise is not that the springs are weak or stiff or that the weight supported by them is light or heavy, but the rate at which our movement is accelerated or retarded. For example, if our direction of up-and-down movement is reversed 110 times per minute we are not nearly as comfortable as if the reversal of movement occurs only 75 times per minute. In the latter case, not only is the frequency of reversal of motion less, but acceleration and deceleration also are less. How excessive retardation causes discomfort is well illustrated when the operator of a high-speed elevator stops the car suddenly.

Mr. Watson said that during his many years of intensive study of the subject of easy riding, he had been able to determine pretty closely just what periods are comfortable to the average human being. The weight of the car generally is fixed in accordance with its price class and all that is necessary is to design springs which in combination with this weight will give the rate of vibration or period that has been found to result in comfortable riding.

In determining the rate of vibration of the rear end, one stands upon some projecting portion at the rear of the car, such as the apron over the fuel tank, the spring horns, etc., and sets the rear part of the car vibrating vertically by jumping up and down. In the case of a man weighing between 150 and 160 lb. the rear part of the car should vibrate at the rate of about 75 cycles per minute. The periodicity can be readily determined by counting the number of cycles for 20 sec. and multiply by three. The period of the front springs can be determined in a similar manner and

Determined by Rate *of Vibration*

comfort in cars is possible with a signing suspension systems, John before the Pennsylvania S. A. E.



should be about 105 per minute, or less for even finer results.

If the springing system has been already designed and it is required to fit shock absorbers to make the car easy riding, the springs in many cases are too stiff. This may be verified by determining the rate of vibration as above described. If the periodicity is too high, one of the leaves may be removed from the spring and the period determined once more. If the period is still above that which has been found the most desirable from the standpoint of comfort, another leaf may be removed. When a period of 75 cycles per minute is finally obtained, the spring is removed from the car and taken to a spring-testing machine where its rate—that is, the number of pounds additional load required to increase its deflection by 1 in.—is determined. From the "rate" the spring designer can then determine the length and other dimensions of a spring that will give the necessary periodicity and at the same time meet the requirements with regard to clearance and strength. The length of the spring thus having been determined, we proceed to the frame of the car and space the spring eyes and spring shackles accordingly.

This is a complete reversal of the procedure now being followed by the automotive industry. Instead of starting with the distance between the frame eye and the shackle, adopting a spring of such length that it will fit this distance, and then proceeding to the control mechanism, the procedure advocated is to start with the adequacy of the control mechanism and determine the spring characteristics in accordance therewith, finally assigning a dimension to the distance between the frame eye and spring shackle.

The periods mentioned in the foregoing are obtainable only with springs which show a generous compression under the normal load on them, and which, therefore, also rebound generously. Such springs are impractical if used with inadequate shock absorbers.

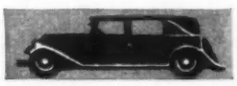
Passing on to the subject of spring control devices, Mr. Watson said he would not dwell on the Watson Rubber-Flow Stabilator but would at once proceed to a discussion of the various hydraulic types of shock absorbers, which are now in most extensive use. There were two general types, one of which comprised a cylinder with a piston capable of moving axially therein. The piston is connected by a link to an arm on a shaft which also carries another longer arm, from the free end of which connection is made by a link to the axle of the car, the cylinder being secured to the frame. In the other type use is made of a cylindrical chamber in which a vane type of piston is used. The chamber is divided by the piston into two or more chambers which are filled with a fluid. As the piston moves in the cylinder, one chamber is reduced in volume and the fluid is forced from it into the other chamber through a small orifice, the resistance to the fluid motion through this small orifice being the source of the controlling force.

Each type of construction has one important advantage and also a serious disadvantage. The advantage of the type in which the piston moves axially in the cylinder is that both the cylinder bore and the piston can be finished by cylindrical grinding and can therefore be readily machined to a high degree of accuracy. Hence it is easy to assure a high degree of oil-tightness (oil being the fluid used). Its weak point is that enormous forces are taken on the piston and its link connection, and must be transmitted through the pin joints of this connection. Now these pin joints necessarily have relatively small bearing surfaces, and in view of the high specific pressures on these surfaces and the fact that there is continuous sliding motion at them as long as the car is under way, wear on these pin joints is rapid.

In order to get away from the rapid wear, some manufacturers have eliminated the link connections and use a cam mechanism instead, but this requires a powerful spring to hold the piston in contact with the cam, and this spring gives an effect exactly opposite to that required for good riding qualities.

What Makes Car Comfort

THE thing that makes a car comfortable or otherwise is not that the springs are weak or stiff, nor that the weight supported by them is light or heavy, but the rate at which the rider's movement is accelerated or retarded . . . How excessive retardation causes discomfort to passengers is illustrated best when a high-speed elevator is stopped suddenly.



The strong point of the vane type is that all pin joints and springs are done away with. The piston and the arm are made in one piece and the only joints with this type are those of the link between the shock absorber and the axle, which, since the arm to which this link connects is materially longer, are subjected to correspondingly less pressure. The weak point of the vane type is the fit between piston vanes and cylinder wall, which it is extremely difficult to make oil-tight. In fact, no oil-tight joint is ever obtained. The path for leakage extends around three sides of the vane. To

compensate for this and reduce leakage to a minimum it is necessary to use liquids of relatively high viscosity, such as glycerine or heavy oils, with this type of hydraulic shock absorber, and this means great variation in their resisting abilities due to the temperature changes.

The force required to make a liquid flow through a given small-diameter passage varies directly as the absolute viscosity of the liquid. Therefore, it isn't a matter of adjusting for winter and summer, but is a matter, if good riding is to be maintained, for readjusting for noon and night on most any average day.

In concluding his talk, Mr. Watson said that many cars today have rear springs that are unnecessarily supple, and that if the passengers in the rear seat experience discomfort it is due to too great stiffness of the front springs. When the front wheels pass over an obstruction and the front springs are comparatively stiff, the springs are not deflected and the car body is subjected to an oscillating motion around a transverse axis about midway between front and rear axles, hence the rear-seat passengers are influenced by the action, or, rather, inaction, of the front springs. He had come across one case in which the front springs were so stiff that the periodicity of the front end of the car was 160 cycles per minute and it was absolutely hopeless to try to correct the suspension of such a car by means of shock absorbers.

During the discussion Mr. Watson was asked what he considered a suitable clearance under the springs of a passenger car when subjected to their normal load, and he gave 6 to 7 in. for the rear springs and 4 to 4½ in. for the front (absolute clearance over spring bumpers). In one case with which he had had to do the periodicity of the front end of the car had been brought down to 88 per min. and this car had the most remarkable riding qualities in his experience. With such a periodicity plenty of clearance under the spring was a necessity. Spring clearances in passenger cars had been generally reduced in recent years, partly because customers called for low cars, and also because is was thought that low clearances improved the appearance. He had not discussed this phase of the subject because the different requirements were antagonistic and users had to make their choice. If they wanted low appearance more than a smooth ride, then it was proper to design for lowness and sacrifice comfort.

Further along in the discussion, Mr. Watson emphasized that there is no substitute for spring clearance. If real cushioning action from springs is desired, the spring must be given freedom of motion.

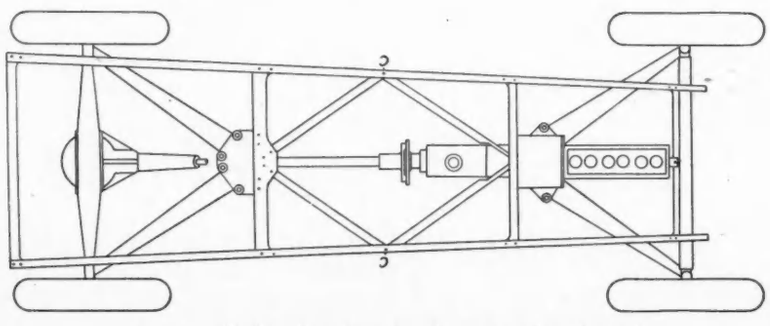
According to Mr. Watson, interleaf friction is entirely undesirable, for the reason that it cannot be controlled. He favors lubrication of leaf springs, because lubricated friction is more amenable to control than dry friction. For a similar reason spring boots are a good thing. He prefers oil lubrication of the leaves to grease lubrication, because after the lubricant is forced off the high spots of the leaf surfaces by the rubbing action, it will return there by capillarity in the case of oil, but not in the case of grease. The better the lubrication, the greater became the need for adequacy of spring control.

Shackles, likewise, have a great deal to do with the ride. Usually where a car is placed in service, it has the shackles well lubricated. The owner neglects the shackles and when they begin to wear and develop rattles he takes the car to a garage and gives instructions to take out the rattles. As a rule, this is done by applying a long-handled monkey wrench to the nuts on the shackle bolts, with the result that everything is jammed tight. The rattles are gone from the springs and shackles, but so also is the suppleness of the suspension and the ride.

In connection with this general matter of shackles and interleaf friction of plate springs quite some discussion arose regarding recent developments and progress made with coil springs, and it was felt that these reasonably might be expected to make their appearance some day in the not distant future.

Light, Non-Weaving Chassis Developed in France

A CHASSIS construction which will not weave under road shocks, although the frame members may lack structural rigidity, has been produced by Engineer Cauzan, of Paris. European and American patents have been secured. The construction, as shown in the accompanying illustration, provides for four single-leaf springs, with ball and socket attachment of their outer ends to the ends of the axle and anchorage to two frame cross-members. The extended axes of the springs meet at the points "c," on the traverse center line of the chassis. Any wheel can be raised in relation to the others without any torsion being transmitted to the chassis frame members.



Cauzan light chassis, showing member layout

The advantages claimed for this type of chassis are that it permits of the mounting of lighter and cheaper bodies which will remain silent indefinitely; cheaper spring construction; and increased stability by reason of the greater distance between the points of attachment of the springs on ends of the axles.

Stewart-Warner Fuel Pump Design Improved by *Changes*

Compensating diaphragm serves to reduce priming time. Vapor traps eliminated in unit, and cam-and-lever spring relocated to assure cold-weather operation.

A NUMBER of alterations have been made in the design of the Stewart-Warner mechanical fuel pump, of which a number of illustrations are shown herewith. The principal improvements are a compensating diaphragm which serves to reduce the priming time; a design assuring fuel travel in a straight line, which eliminates vapor traps; a vapor dome of special design, and a cam-lever-follower spring so located as to be unaffected by congealed oil or frozen sludge.

Referring to Fig. 1, the fuel enters at *J*, passes down into the glass bowl, where dirt and water are separated out, and then on through the fine-mesh strainer screen and valve *F* to the pump chamber. From the pump chamber the fuel is forced through the valve *K* to the discharge connection *Y*. During its travel through the pump, and especially after passing the discharge valve *K*, the fuel pursues a continuously upward course, hence there is no possibility of segregated vapor traps forming along its line of travel.

Any vapor that may be generated by the mechanical effect of the diaphragm on the fuel, etc., collects in the vapor dome *Q*. During the upward movement of the diaphragm these vapors are compressed, and during the following down stroke the expansion of the vapors maintains the flow of fuel through discharge connection *Y*. Expansion chamber *Q* is separated from the pump proper by the baffle plate *P* with four holes through it, through which the vapors enter and through which any condensed fuel returns to the pump.

Another feature of the pump is a device which reduces the stroke of the diaphragm when the carburetor float chamber is filled nearly to the proper level and

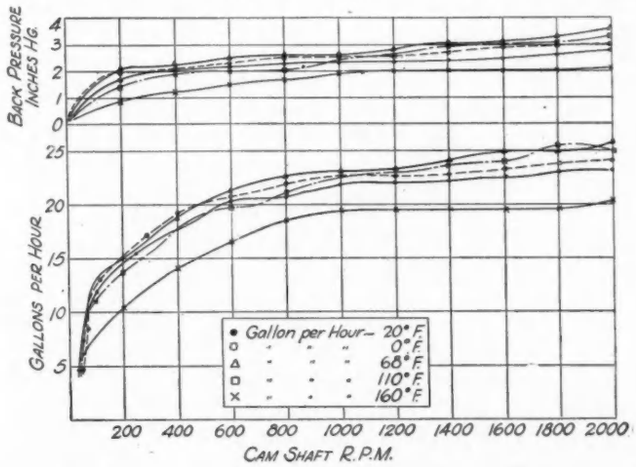


Fig. 2—Temperature effect on delivery rates and on back pressures

Supply line, 12½ ft. of ¼-in. outside diameter tubing; discharge line, 15 in. of 3/16-in tubing; lift, 18 in.; discharge 0.110 in. diameter

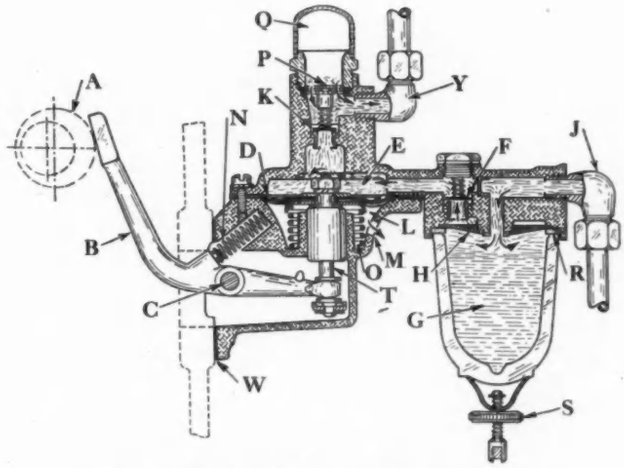


Fig. 1—Sectional view of Stewart-Warner mechanical fuel pump

the float valve therefore restricts the inlet to this chamber. Movement of the operating lever *B* is transmitted by the plunger *T*, which consists of an assembly containing a silencing washer in a retaining cup riveted to it at its lower end. The slidable spool, which is used as "pickup" or delaying mechanism, fits loosely on the reduced diameter of this plunger. The spring *N* is mounted in a hole in the die-cast body of the pump and serves to hold operating lever *B* in constant contact with the cam. The diaphragm assembly is rigidly connected to the upper end of plunger *T*, which is guided in the boss of the casting. This improved construction eliminates the possibility of the springs freezing up through the collection of condensed water vapors. Any moisture and oil which collects in the chamber containing spring *O* will return to the crankcase through a drain hole.

When the fuel delivery line is wide open, the pump will perform a complete stroke. But as the resistance to the flow of fuel increases, the diaphragm assembly and guide are forced away from the pick-up washer and the stroke is reduced.

The discharge spring *O* is supported on the die casting and presses directly against the lower plate, which controls the range of elastic action of the diaphragm, and hence the delivery pressures at various rates of discharge.

The face of the operating lever that bears against the cam is hardened, as are the surfaces of the holes for the pivot pins. The upper plate of the diaphragm is given a particular shape designed to compensate for the "bagging" effect of the diaphragm. When the diaphragm is in the highest position it assumes the shape of a conical frustrum. As it moves downward the slack which develops in it is taken up by the shape of the upper plate, thus overcoming the tendency of the dia-

phragm to wrinkle, whereby its life is increased. It is claimed that after being in service for some time the diaphragm assumes the smooth form of the upper plate and is then free from both radial and isolated wrinkles.

The plate diameter has been enlarged, because that adds to the priming capacity of the pump, and also because it enables the plate to act as a better support for the diaphragm. This improvement also has increased the operating range or range of speeds at which the pump will furnish sufficient fuel over a temperature range of from below zero to 160 deg. Fahr.

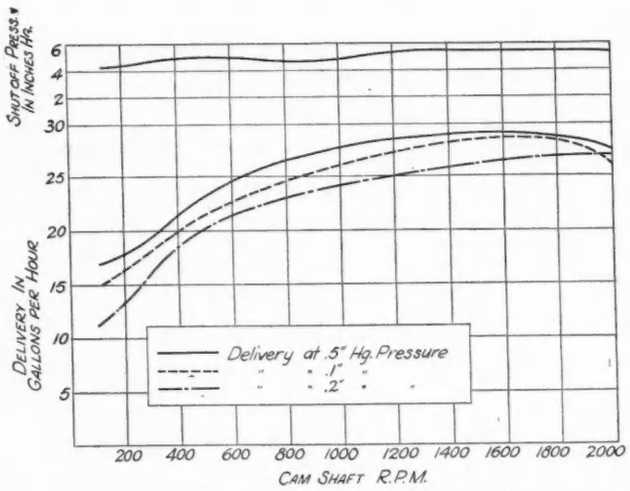


Fig. 3—Delivery rates and shut-off pressures at various speeds

Supply line, 12½ ft. of ¼-in. outside diameter tubing; discharge line, 15 in. of 3/16-in. outside diameter tubing; lift, 30 in.; pressure control, 5/16-in. shut-off cock

Fig. 2 shows the delivery rate of the pump at various temperatures, and it will be seen that between 800 and 2000 r.p.m. this rate is practically constant for any given temperature. Fig. 3 shows the delivery rate at various speeds for discharge pressures of ½, 1 and 2 in. of mercury column. Corresponding pressures at various speeds when there is no delivery are also shown in this figure. It will be noted that there is little variation in the shut-off pressure between 400 and 2000 r.p.m.

Durant Announces Rugby Truck Chassis

WITH the introduction of its new line of trucks, comprising a ½-ton and a 1-ton chassis, the Durant Motor Co., Lansing, Mich., will inaugurate an active truck-selling campaign through its passenger-car dealer organization. The two chassis, with wheelbases of 112 and 135 in., are priced respectively at $655 and $865. With panel bodies the two models sell at $885 and $1,160 respectively. With dual wheels and tires the larger truck is rated at 1½ tons.

Features of the new line are a four-speed, heavy-duty transmission on the 1-ton model, with provision for two power take-offs, rugged frame construction, a design of rear axle which permits of the use of either single or dual wheels, exceptionally large loading space, absence of wheel housings inside the bodies, flexibility throughout the chassis and attractive appearance of the vehicles.

The new trucks are powered with a six-cylinder Continental engine of 3¼-in. bore and 4-in. stroke developing 57 hp. at 2800 r.p.m. Engine parts are largely interchangeable with those of Durant passenger car engines. The engines are supported on rubber mountings at four points. A Brown-Lipe four-speed transmission with its two power take-offs and integrally-mounted emergency brake is combined with the engine into a unit powerplant. The three-speed transmission on the ½-ton model is also in unit with the engine.

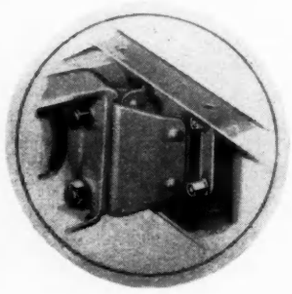
Rear axles on both models have straddle-mounted pinions and are of the semi-floating type. The standard reduction on the ½-ton is 4.4 to 1, that on the 1 ton, 5.375 to 1, with optional ratios of 6.625 and 7.28 to 1. With the latter a total overall low-speed reduction of 46.7 to 1 is obtained. The smaller car has a gross weight rating of 4150 lb., the chassis weight being 2150 lb. The 1-ton unit has a gross weight rating of 6150 lb. when equipped with single wheels and tires, its chassis weight being roughly 2900 lb.

The trucks are equipped with Steeldraulic four-wheel service brakes. Hotchkiss drive is used in combination with semi-elliptic springs all around. In this connection it will be noted that the front spring horns are similar to those on passenger cars.

On the one-ton model auxiliary helper springs are available, permitting a 33 1/3 per cent increase in load capacity, according to Durant engineers. They are particularly useful in connection with dump bodies which place a large proportion of the load directly over the rear axle.

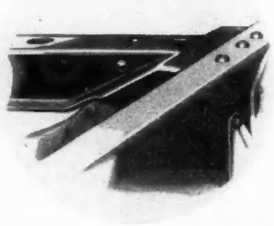
Frames are exceptionally sturdy, as will be noted from the cross members near the center of the 1-ton model. These cross members are of the "box" type with wide lower flanges, and are gussetted to both upper and lower frame side rail flanges.

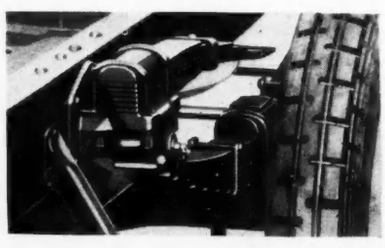
Included in the standard chassis equipment of both models are the following items: Air cleaner, oil filter, engine thermostat fuel pump and filter, tail and stop lights, and front bumper. On the instrument panel are found a coil-type ignition lock, push-pull controls for spark, throttle and choke, an electric gasoline gage and an electric engine temperature indicator in addition to the usual speedometer, ammeter and oil-pressure gage.



Above is a detail of the engine mount of the Rugby truck

Auxiliary helper spring on the Rugby 1-ton truck is shown below





Frame cross-members of the box type (above) are used on the Rugby truck

First *British Diesel-Engine* Truck *Uses* Chain *Drive*

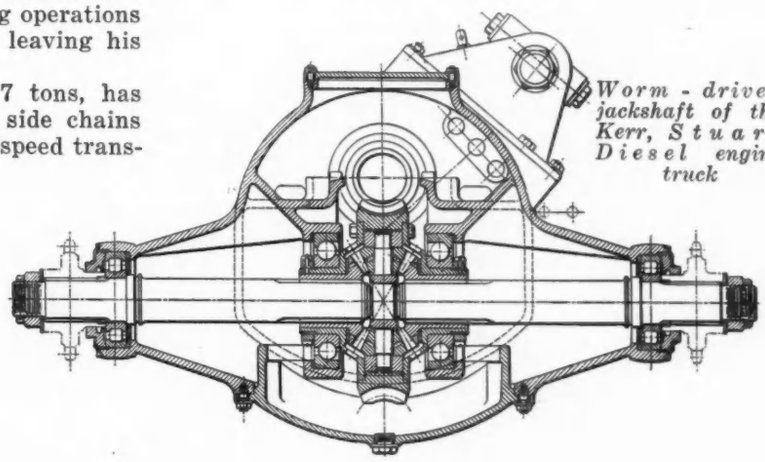
Drive from transmission to jackshaft is by worm gearing. Unit is powered by McLaren Benz plant, which is of the precombustion chamber type developing 70 hp.

WHAT is probably the first Diesel-engine truck to be placed in production in Great Britain has been announced by the firm of Kerr, Stuart & Co., Ltd., of Stoke on Trent, and is described in a recent issue of *Engineering*, from which the following particulars and the drawing of the rear axle end are taken.

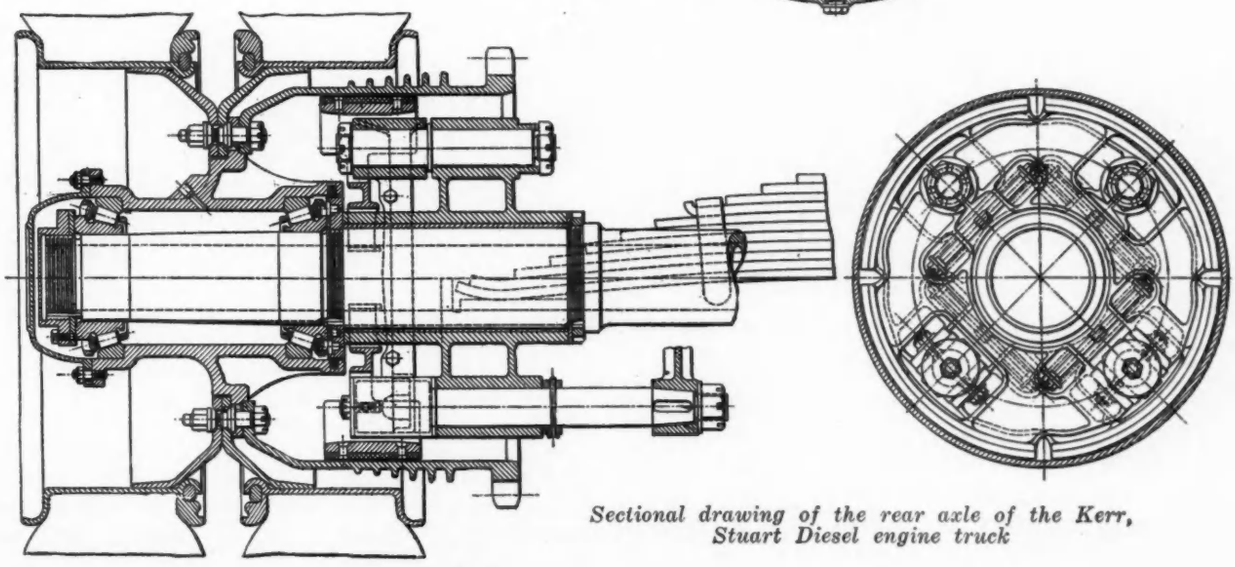
The engine fitted is the McLaren Benz, which is of the precombustion chamber type. It has four cylinders of 5 5/16 in. bore and 7⅞ in. stroke and develops 70 hp. at 800 r.p.m. The Diesel engine is started by means of a small air-cooled gasoline engine of the motorcycle type fitted with a pull starter, this engine driving the Diesel engine through friction gear acting on the flywheel rim. The starting engine is located under the second seat in the cab on the right side and all of the necessary starting operations can be performed by the driver without leaving his seat.

The truck, which has a capacity of 7 tons, has a wheelbase of 162 in. It is driven by side chains from a jackshaft combined with the four-speed transmission. The transmission is mounted separately and the engine power is transmitted to it through a reverse cone clutch and a short shaft with fabric-disk universal joints. Overall reductions between engine and rear wheels are 4.4 to 1 in high, 7.94 to 1 in third, 14.78 to 1 in second and 29.35 to 1 in low, these reductions giving the following truck speeds at an engine speed of 800 r.p.m.: 20, 11.1, 6.3 and 3.16 m.p.h.

An interesting feature is the method of mounting the combined transmission and jackshaft housing. It may be pointed out that the drive from the transmission to the jackshaft is by worm gearing. There are three spherical mounting surfaces, one at the forward end of the transmission housing and two at the ends of the jackshaft housing. This mounting permits of a certain amount of chassis play without straining the gearbox. The forward end of the transmission is supported on a cross member of the frame



Worm-driven jackshaft of the Kerr, Stuart Diesel engine truck



Sectional drawing of the rear axle of the Kerr, Stuart Diesel engine truck

while the ends of the jackshaft housing are supported directly on the frame side rails.

The rear wheels, which are of pressed steel and detachable, are driven from sprocket pinions at the ends of the jackshaft through silent roller chains of 2½ in. pitch, which engage with sprockets formed integrally with the brake drums. The driving wheels are mounted on taper-roller bearings carried on a dead axle in the form of a light tube of nickel steel, this design having been adopted, in preference to a live axle, in order to reduce the unsprung weight to a minimum. The weight of the dead-axle tube is 2 cwt., whereas that of a live axle for the same loading would be of the order of 7 cwt., so that a very material reduction in tire wear results from the employment of the former. The brake drums, it will be seen, are provided with radiating fins to dissipate the heat generated, and ample clearance is left between the drum and the tire rim so that tires shall not be injured by the heat. There are four brake shoes, of the internal type, on each rear wheel, and two on each front wheel. Of these, two on each back wheel, and those on the front wheels, are operated simultaneously by means of the brake pedal, the other shoes on the back wheels being operated by the usual pull-on lever and being intended mainly to hold the truck when stationary. The power of the brakes is such that the truck can be brought to rest from a speed of 20 m.p.h., on a dry road, in a distance of 26 ft. 8 in.

A new system of springing, which the makers describe as "enharmonic springing," is employed for the back axle, its object being to reduce bounce to a minimum while retaining the full resiliency of the springs. For this system, two exactly similar transverse semi-elliptic leaf springs, one of which is shown in Fig. 1, are located parallel with the axle, one on each side, the ends bearing on pads on the brake housings. The axle is, of course, constrained to move in the arc of a circle by means of the usual radius rods, and it is claimed that, since the forward spring is nearer the pivot point of the radius rods than the other, the harmonic vibrations of the two springs after deflection are out of phase, and are consequently rapidly damped out. The front axle, which is a drop forging, is carried on semi-elliptic longitudinal springs, pinned at the forward ends, and bearing on slippers at the rear ends. The wheels are mounted on taper-roller bearings, and are steered by means of the Marles gear, which, as is well known, employs a ball-bearing roller in conjunction with a specially shaped helical cam. Since a taper-roller bearing is fitted at the top of the axle pivot pin to take the upward thrust, the steering is particularly easy. Single 36-in. by 8-in. pneumatic tire are standard on the front wheels and twin tires on the rear wheels.

Machining Connecting Rods

IN the machining of connecting rods of the shimless type, it is necessary either to rough bore the large end elliptically to size (to take care of the material removed by the splitting saw later), or else to chamfer the large end elliptically to facilitate boring after splitting and reassembly. The latter method has been quite widely used, but due to the elliptical shape of the chamfer, two operations are generally required.

To combine both operations in a single set-up on an automatic machine, the Olds Motor Works has developed the special machine shown in Fig. 1. It is based on a double-ended milling machine, and incorporates a work mounting head having a vertically reciprocating motion produced through an eccentric on a rotating cross-shaft above the work head.

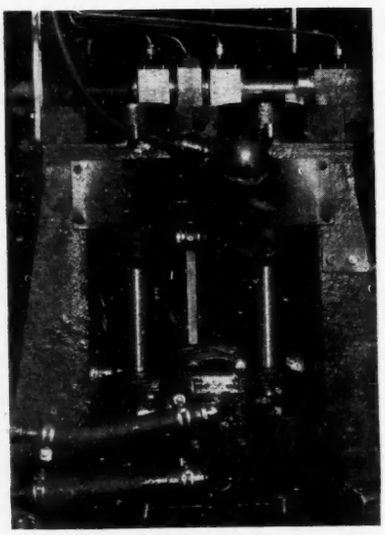


Fig. 2—Connecting rod in machine for automatic facing and chamfering of big end

The mechanism is shown in detail in Fig. 2, which shows a rod mounted for the simultaneous automatic facing and chamfering of both sides of the big end. At the top may be seen the vertical motion producing eccentric, between the cross-shaft bearings. This cross-shaft rotates at 100 r.p.m., producing 200 strokes per minute, of 3/16 in. amplitude, the amount of eccentricity required for the chamfer.

Fig. 1—Automatic machine used at the Olds Motor Works which combines two operations in machining connecting rods

Location of the rod is by means of a pin through the pin end of the rod, and side chucking on bosses on the connecting rod center section near the big end face. These side grips are air operated, with an arrangement by means of which the pressures are not equalized on both sides, making it possible to locate the lower end sideways from a solid stop on one side. Since the entire holding mechanism moves with the rod in its reciprocating motion, air connections are through rubber hose as shown in Fig. 2 at the lower center, and upper left.

Both sides of the big end are faced and chamfered simultaneously with circular cutters, operated by automatic cam feed heads.

Unloading of the machine is also automatic, the rod dropping through the machine into a slide and pan provided for that purpose. The entire installation is self lubricating.

Just Among Ourselves

The Country's Gain—An Industry's Loss

"JOHN N. WILLYS has been appointed Ambassador to Poland."

This news, flashed throughout newspaper headlines of the country, meant to the average citizen that a big automobile man had been appointed to an important diplomatic post.

To automotive executives and automotive business paper men, it meant that one of the best-loved, most entertaining and most human of their industrial associates was going to be absent in a far country for some time to come; it will mean to hundreds of people in this automobile business temporary loss of one of the industry's most friendly personalities—a loss which will be felt by many who know Mr. Willys casually as well as by the scores who count themselves as friends.

* * *

Motor Vehicles in Poland Predominantly American

ABOUT 70 per cent of the 25,621 passenger cars in Poland are of American design, A. W. Childs, chief of the Automotive Division, Bureau of Foreign and Domestic Commerce, tells us. About 80 per cent of the 7280 trucks in Poland are of American make, while nearly 95 per cent of the 4418 buses operating there were built by American companies.

Despite the vast differences in motor vehicle registrations between the country of Mr. Willys' birth and that to which he becomes ambassador, he is going to an area which, considering its size and stormy history, has already developed considerable automotive activity. General Motors has an assembly plant in Poland, while some assembly of Essex, Whippet, Erskine and Citroen vehicles is taking place, we understand, in distributor-owner premises.

Poland, too, has one all-Polish factory, the Ursus factory, which last year produced something like 450 four-cylinder trucks and buses.

According to the best information we have been able to get, there are something like a hundred wholesalers, importers, retailers and agents of one kind or another merchandising motor vehicles in Poland.

* * *

An Automotive Leader Enters Broader Fields

WHILE Mr. Willys now enters fields of thought encompassing broader problems than those included in the automotive field, his friends in the industry always will think of him as having a particular interest in the affairs of the industry in which he has so long played a commanding part. Many of them may think of him as we do at the moment, as scanning with a specially expert eye automotive progress in the country to which he is about to go, familiar with it as he is through former visits.

Mr. Willys, leaving a country in which there are 26,634,210 cars and trucks, goes to one where there are less than 39,000. He leaves a country where there is one motor vehicle for every 4.5 persons and goes to one where there is one motor vehicle for every 800 persons.

* * *

Best Wishes for Further Great Achievements

ALL in all, Mr. Willys won't be without automotive things to interest him in this new temporary home of his, and we take this chance to express the hope that such automotive activity as he finds in Poland will serve to remind him of the continued hopes for his success, happiness and further achievement which all of his old automotive friends back home wish for him.

Racing's Engineering Value Consistently Overestimated

AFTER giving credit to automobile racing for all of the many splendid contributions to automotive technical development which unquestionably can be attributed to it, we always return to a strong belief that many of those who are racing enthusiasts definitely and consistently overestimate the engineering values derived from this sport.

Thos. P. Henry, president of the A.A.A., in his brief and inspiring message, which appears in the book just issued to Contest Board members containing the new competition rules, makes the statement that:

". . . . No one seriously denies that the race track has been and ever will continue to be the greatest laboratory of automotive engineering."

In a foreword to the same booklet, Capt. E. V. Rickenbacker says: "Fully seventy per cent of the engineering improvements and refinements that have gone into the modern automobile are the products of experience gained under the stress and strain of competitive racing . . . ."

* * *

Superlative Worth Seriously Denied

AS regards the first statement, we miss our guess badly if plenty of people can't be found who "seriously deny that the race track has been and ever will be the greatest laboratory of automotive engineering." We humbly announce ourselves as one denier of so superlative a statement. We do think more general agreement might be reached on the statement that "No one seriously denies that the race track has been and probably will continue to be a great laboratory of automotive engineering."—N. G. S.

Automobile Advertising in Magazines 15 Per Cent *in 1929*

Analysis of fluctuations by months shows that space in medium had a mean deviation of 12.5 per cent, while that of production was 26.4 and sales 27.8 per cent.

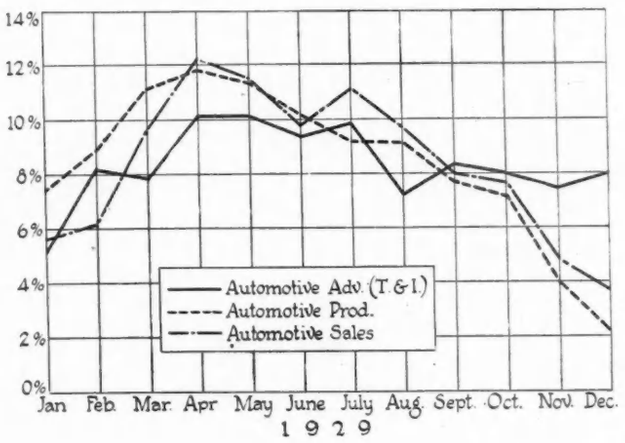
ACCOMPANYING the increase of 24 per cent in sales of passenger cars which marked the year 1929, there was a gain of 4 per cent in automotive display linage placed in daily newspapers, and a gain of 15 per cent in appropriations for national magazine advertising by the major units of the industry engaged in the manufacture of passenger cars. The gain in newspaper linage is based on comparative figures for 1928 and 1929 from 74 identical cities in the United States, and the national magazine appropriation figures are taken from a list of the 150 leading advertisers, compiled from the point of view of the amount of money they spend in national magazines.

Analysis of fluctuations in the monthly volume of national magazine advertising, compared with fluctuations in production and sales shows that, while advertising for 1929 had a mean deviation of 12.5 per cent for the 12 months' period, production deviated 26.4 per cent and sales 27.8 per cent. These figures were got by taking the production, or sales, of advertising for the whole year and dividing by 12 to establish the normal percentage of the whole volume for one month, or 8 1/3 per cent. The actual deviations above and below this theoretically constant figure were calculated and added to give a total deviation, from which the mean deviation was figured.

Study of the chart accompanying this article, upon which is graphically represented the fluctuations of national magazine advertising, compared with production and sales of passenger cars, definitely establishes April, 1929, as the peak month for all these factors. From the advertising standpoint, other industries which place the largest volume in April are building materials, cigars, cigarettes, and tobacco, drugs and toliet goods, furniture, machinery and mechanical supplies, and soaps and housekeepers' supplies. With the exception of tobacco advertising, that for automotive lines showed the lowest mean deviation of any of the commodities in the group named above.

In the month of April, 1929, 10.1 per cent of national magazine advertising for automotive lines was placed, passenger car production accounted for 11.8 per cent of the year's output, and sales registered totaled 12.2 per cent of sales for the year. In the following month, the same volume of advertising linage was placed in national magazines, but production dropped 0.5 per cent, and sales dropped 0.7 per cent.

In July, September, October, November, and December of 1929 the monthly proportion of advertising



Automotive Display Linage

City	1928	1929
Akron	2,168,989	2,412,538
Albany	1,848,397	2,609,548
Albuquerque	1,793,196	2,169,955
Atlanta	2,621,879	2,754,085
Baltimore	3,012,937	3,147,957
Birmingham	2,205,970	2,552,404
Boston	5,236,181	5,561,572
Bridgeport	1,320,812	1,697,749
Buffalo	4,022,873	4,188,535
Canton	1,778,791	1,720,743
Chicago	5,524,922	5,523,246
Cincinnati	2,888,073	3,004,415
Cleveland	3,814,376	3,873,260
Columbus	2,427,177	2,739,671
Dallas	2,786,494	2,957,396
Dayton	2,905,635	3,061,860
Denver	2,659,184	2,276,011
Des Moines	2,278,066	2,193,835
Detroit	4,514,611	4,652,609

City	1928	1929
Duluth	1,330,679	1,307,706
El Paso	1,969,322	2,342,512
Fall River	1,112,547	831,692
Fort Wayne	1,607,266	1,812,261
Fort Worth	1,731,036	2,152,556
Hartford	2,547,629	2,827,775
Houston	2,193,725	2,428,741
Indianapolis	2,824,428	3,101,478
Jacksonville	1,654,274	1,676,596
Kansas City (Mo.)	2,614,338	3,175,928
Knoxville	1,744,700	1,759,925
Los Angeles	5,698,370	5,751,815
Louisville	1,980,117	2,280,607
Memphis	2,591,211	2,982,264
Milwaukee	2,769,525	2,863,870
Minneapolis	2,494,890	2,628,922
Nashville	2,045,414	2,046,915
Newark	3,204,437	2,617,308
New Bedford	1,078,704	1,447,614

Increased

By HERBERT HOSKING

Passenger Car Sales

Group	1929	1928	Gain or Loss
Ford	1,316,270	486,661	+170.4%
General Motors	1,271,067	1,294,534	— 1.8%
Chrysler	344,878	338,996	+ 1.7%
Hudson	254,026	225,401	+ 12.7%
Willys-Overland	201,093	237,381	— 15.3%
U. S.	3,880,152	3,131,672	+ 23.9%

is greater than the proportion of production registered for each of these months. In July and August, the proportion of sales was larger than the proportion of advertising, but the remaining months of the year the proportion of sales is below that of advertising, but from July to December, inclusive, remains in advance of the production trend.

Complete information on the fluctuation of newspaper linage placed by passenger car companies, month by month, is unfortunately, not available. Study of the available figures indicates that during the months of November and December, 1929, newspaper linage dropped sharply, in much higher proportion than magazine space.

Comparative figures have been compiled showing the automotive display linage placed in 30 cities for the months of May, June, August, and November of 1928 and 1929. For the month of May, 1929, daily and Sunday newspaper display linage showed a gain of 27 per cent, as compared with May, 1928. In June the gain was 170 per cent, compared with June, 1928, and 89 per cent as compared with May, 1929. August display linage dropped 3 per cent, as compared with 1928, and 55 per cent compared with the display linage for June, 1929.

Taking national magazine appropriations alone, comparative sales and advertising factors for the five leading automotive national magazine advertisers for which both 1928 and 1929 figures are available, are as follows:

The General Motors Corp. increased its national magazine appropriation for all units 39 per cent in 1929, as compared with 1928. This represented an increase of approximately $2 per car sold, or 41 per cent on the same basis. Sales for the 1929 period dropped 1.8 per cent.

The Ford Motor Co. increased its whole magazine appropriation 35 per cent, but this represented a decrease of 50 per cent in the number of cars sold. In 1929 the national magazine appropriation per car was approximately $1.17, while for 1928 it was approximately $2.34. Production during the 1929 period gained 170 per cent, as compared with 1928.

The Chrysler Corp. lowered its national magazine appropriation 16 per cent in 1929, representing a decrease of 17 per cent in the pro rata cost per car sold. Sales of all units of the corporation in this period gained 1.7 per cent in 1929, as compared with 1928.

The Hudson Motor Car Co. increased its national magazine appropriations 21 per cent in 1929, as compared with 1928. In 1928 the pro rata cost per car sold was $4.09; in 1929, $4.41, an increase of 8 per cent. Sales during 1929 increased 12.7 per cent.

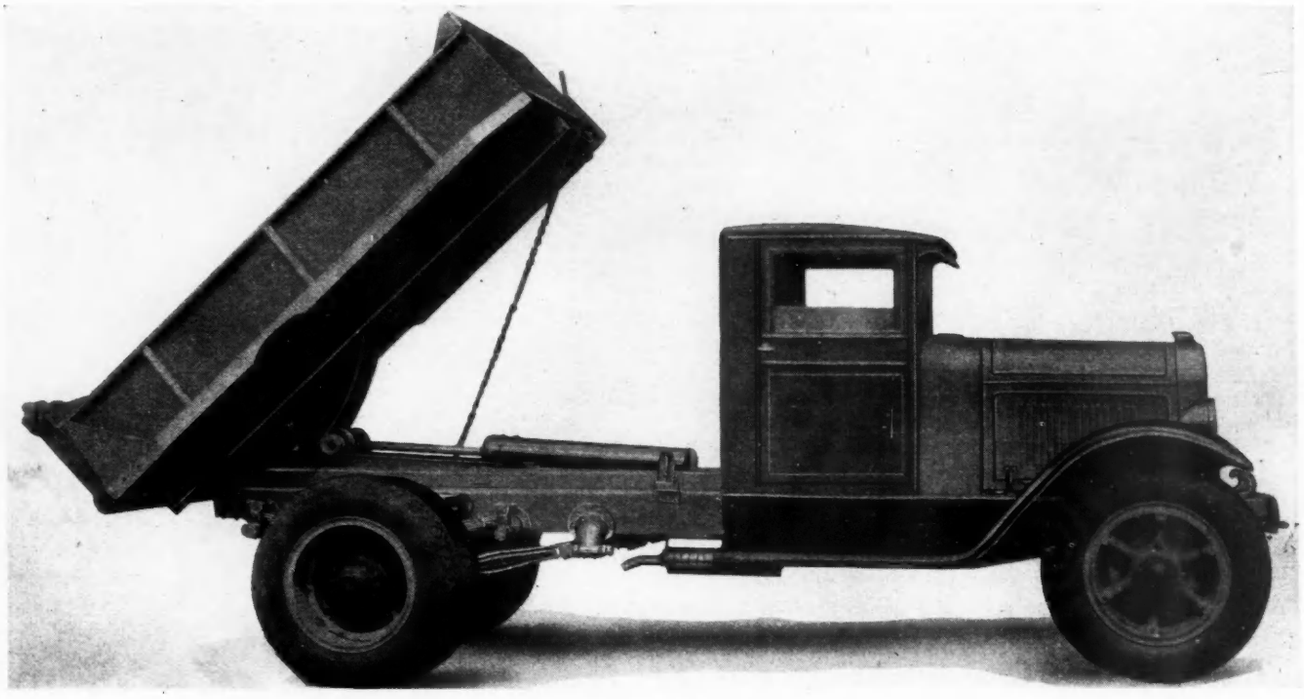
The Willys-Overland Co. increased its national magazine appropriation 15 per cent in 1929, as compared with 1928. The increase in cost per car sold was 36 per cent. Sales decreased 15.3 per cent in 1929.

National Magazine Advertising

Group	1929	1928	1927
Gen. Motors (all units)	$8,637,042	$6,197,615	$6,399,978
Chrysler	2,091,079	2,492,181	1,367,778
Ford	1,551,555	1,142,075	358,555
Hudson	1,121,560	923,125	925,710
Studebaker	975,319	.....	.....
Willys-Overland	888,980	772,525	1,116,500
Packard	819,040	840,550	938,110
Hupp	604,200	586,550	690,625
Auburn	543,470	413,914	471,872
Reo	485,600	507,000	611,000
Nash	350,860	311,450	438,990
Franklin	350,400	298,300	308,610
Graham-Paige	292,450	297,175	415,150
Total	$18,711,555	$15,757,779	$15,018,197

in Daily Newspapers

City	1928	1929	City	1928	1929
New Haven	1,898,847	2,274,741	Seattle	2,858,351	2,888,572
New Orleans	2,399,188	2,561,065	South Bend	1,909,086	2,094,162
New York	6,950,813	8,482,081	Spokane	2,200,618	1,962,756
Norfolk	1,484,341	1,816,992	Springfield	1,541,557	1,912,315
Oakland	1,822,652	1,815,120	St. Louis	3,040,867	3,222,654
Oklahoma City	2,170,070	2,526,743	St. Paul	2,111,739	2,426,004
Omaha	1,751,903	1,981,826	Syracuse	2,993,378	3,118,132
Philadelphia	4,982,235	5,754,625	Tacoma	1,890,458	2,105,347
Pittsburgh	3,298,241	2,587,854	Tampa	1,362,630	1,591,026
Portland	2,773,768	2,474,383	Toledo	2,414,348	2,468,679
Providence	2,436,757	2,592,681	Trenton	983,168	1,332,367
Reading	1,601,707	2,080,052	Tulsa	2,569,453	2,760,336
Richmond	1,772,637	1,814,937	Utica	2,061,940	2,216,254
Rochester	3,123,968	3,132,421	Washington, D. C.	4,055,050	4,119,591
Salt Lake City	2,200,368	2,573,272	Wilmington	2,217,458	2,709,437
San Antonio	2,461,007	2,450,328	Worcester	2,390,454	2,765,870
San Diego	3,517,765	3,349,578	Youngstown	1,805,513	1,967,444
San Francisco	4,127,992	4,014,389			
Scranton	1,753,497	2,270,847	Total	202,137,844	209,533,494



Stewart Model 31X *five-ton truck*

Stewart Starts Production on Five-Ton Truck With 100-hp. Six-Cylinder Engine

STEWART MOTOR CORP., Buffalo, N. Y., has started production on a new design of 5-ton truck, known as the Model 31X. It is equipped with a six-cylinder engine of 4⅜ by 5⅛ in. bore and stroke, which develops 100 hp. at 2000 r.p.m. The truck has a wheelbase of 165 in., the chassis weight is 8400 lb., and the chassis price $4,990.

The transmission of this new truck affords eight forward speeds and two reverse. It is described as a dual-unit type, consisting of a two-speed clutch unit, bolted directly to the bell housing of the engine, and a four-speed main frame transmission with three-point support. With an 8¾ to 1 rear-axle ratio the following overall reductions are obtained:

Speed	Low Range	High Range
First	82.0	28.00
Second	41.4	14.15
Third	25.6	8.75
Fourth	19.0	6.56
Reverse	82.0	28.00

The clutch is of the multiple-disk dry type and contains 15 disks with a total contact area of 352 sq. in. Positive means of lubrication are provided for both the pilot bearing and the throw-out bearing.

The front axle is of the reverse Elliott type with a beam section 2½ in. wide by 3 in. deep. The wheel spindles are 2 in. in diameter at the inner bearing. The tie rod of the steering gear consists of a 1¼-in. seamless steel tube.

The rear axle is a Timken full-floating type with overhead worm drive. Its axle housing is made of cast steel, reinforced by nickel-steel tubes 3½ in. in diameter. The worm shaft is mounted on two Timken roller bearings at the rear end and on a single Hyatt roller bearing at the forward end. The worm wheel is riveted to a four-pinion differential of large size, which latter is supported in the housing by Timken roller bearings. As already mentioned, the standard rear-axle reduction is 8¾ to 1, but optional gear ratios of 7 4/5 to 1 and 10 1/3 to 1 are available at extra cost.

Four-wheel mechanical service brakes are fitted, the front brakes being Bendix self-energizing, two-shoe brakes, 16 by 2½ in., while the rear brakes are Timken, 17¼ by 5 in. Both front and rear brakes are provided with molded linings, and are applied through a B-K booster. In addition to the four-wheel service brakes, a transmission brake is fitted which operates on the driveshaft. It is 11 in. in diameter and 5 in. wide.

The steering gear is of the Ross cam-and-lever type. All springs are semi-elliptic, of silico manganese steel. The frame members are pressed from open-hearth carbon steel and carefully heat-treated. Side rails are made of 9/32-in. stock, with a maximum depth of 9 1/16 in. and with flanges 2¾ in. wide. The overall width of the frame is 34 in.

A tubular-type radiator is fitted with cast aluminum, highly polished top and bottom tanks and side members. Cast-steel wheels with eight hollow spokes each are standard equipment and are fitted with 36 by 6 in. solid rubber tires, single in front and dual at the rear. Pneumatic tires (38 by 9, front, and 40 by 10 dual, rear) are supplied at extra cost. A number of additional options are given on wheel and tire equipment. Budd wheels can be had and also the new truck-type balloon tires. The driveshaft and universal joints are of Spicer make and chassis lubrication is by the Alemite system.

The chassis is supplied in two wheelbase lengths at the regular price—165 in. and 150 in.

Radio-Beam for Aircraft *Landings* in *Fog Being* Developed

Device regulating the height of the plane's path as it approaches the ground promises to solve the problem now being studied by the Bureau of Standards.

ONE of the projects on which the Bureau of Standards has been engaged for about a year is the use of radio to aid airplanes landing at an airport in dense fog when the ground is invisible. Numerous methods and devices are being tried, and two more years may be needed to reach a complete solution of the problem.

The pilot landing in fog must be given instantaneous information on his three coordinates in space. That is, he must be guided to and along a suitable runway, must know how far along it he has gone, and the height of the landing path above ground must be properly regulated. Of these three requirements, the first is given by a small directive radiobeacon, the second by a marker beacon, and the third by a landing beam. The first of these, the small directive beacon, has been installed by the bureau both at its own field, College Park, Md., and at Mitchel Field, L. I., for the Guggenheim Fund. At Mitchel Field successful blind landings were made by Lieut. J. H. Doolittle in September, using this beacon in conjunction with several nonradio instruments.

At College Park all three elements of the system have been installed, the small directive beacon, marker beacons, and the landing beam. The first two are identical in principle with the same devices developed for use on the airways for guiding airplanes from one airport to another; these are described in "Aircraft radiobeacon development by the Bureau of Standards," and in Air Commerce Bulletin, Aug. 15, 1929.

The method now being tried to provide the third element of the system, i. e., to regulate properly the height of the landing path as the airplane approaches the landing, is a directed beam. This beam, of 60,000 to 100,000 kilocycles, is directed at a small angle above the horizontal. A very simple receiving arrangement with visual indicator is used on the airplane. When the airplane is so maneuvered as to keep the deflection of this indicator always at a fixed point, the airplane follows a gliding path down to the ground which is quite suitable for the landing operation. In one experiment, the landing path marked out by the beam began at approximately three miles from the transmitter; the shape of the path can be judged from the following table:

Distance from Transmitter:	Height Above Ground, Feet
3 miles	2,000
2 miles	500
1 mile	240
½ mile	85
1,000 ft.	15
750 ft.	10
500 ft.	5

It will be noted that the slope of this path decreases as the pilot approaches the ground.

Many technical problems remain to be overcome. As the elements of the system are tried in combination, some may be entirely altered. The work has advanced to the point, however, where the bureau is convinced that it will be possible to give instantaneous position in three dimensions to a pilot in such manner that he may successfully land in dense fog.

New Type Flashers

THE Aeronautics Branch of the Department of Commerce has awarded a contract for 100 sign flashers of a new type incorporating a mercury tube make-and-break instead of the old style metallic contacts. The sign flasher is employed in electric code beacons which are stationary auxiliary lights mounted on towers between beacons for use as obstruction lights. They are also used as markers for landing fields or other areas where identification by night is of assistance to the pilot.

THE FORUM

Some Useful Points in Automobile Engines

Editor, AUTOMOTIVE INDUSTRIES:

I am daily using a Model T Ford coupe of late 1922 vintage that I think can give useful information to builders of auto engines. This car does not have a speedometer but my driving will average 15,000 to 18,000 miles annually, so it has safely made more than 100,000 miles, and as the crankshaft turns about 2440 times to make a mile I am satisfied that, counting idling and hill-climbing, it has turned over more than 250,000,000 times, which is quite respectable for any kind of engine and more so for an explosion engine that gets as rough treatment and usage as auto engines do.

That, though, is not the most remarkable about this powerplant as many crankshafts have undoubtedly made better records than this one has so far. The most surprising in this case is the fact that I have never yet ground a valve or changed a piston ring, and the valves are even today seating perfectly and need no attention. The piston rings could, of course, stand renewal, but that expenditure is not yet necessary.

It is not so easy to understand how valves can wear that way, and I am quite satisfied that this is about the only case where a Ford engine—or any automobile engine for that matter—ever showed such a record. I have looked at the valves and seats some five times when a new head gasket was put in, and they are perfectly smooth and even. The metal of the cylinder casting is pitted in places in the neighborhood of the valve seats, but a narrow strip of metal has always been left intact and seems to be just the amount needed to wear at the same rate as the cams and push rods combined.

Of course, it was entirely accidental that such parts happened to be assembled in this case, and the fact that the car is provided with a special carburetor and special oiling system has undoubtedly helped considerably toward the remarkable results, because the original oiling system was inadequate and the old carburetor was not only wasteful of fuel but also unquestionably was the true cause of the bad accumulation of carbon so common to Ford cars of this type. In this case I have never had to remove carbon, and the head, when removed, has never had more than a very thin carbon coating of a light gray shade. This carburetor is easily adjustable and as soon as the engine is warm I adjust it to a point where a minimum of gas is used for effective and uniform explosion.

This, I am sure, is the great secret not only in preventing carbon accumulation but also in helping to preserve valves and seats. Of course, it does not tell the whole story, because when a valve is lifted more than 100,000,000 times by cams there cannot help but be a certain amount of wear at contact points, more so as the oiling is not altogether ideal, and this must be compensated for at the upper ends, a thing that seems to actually have taken place. The amount of bearing surface and hardness of metal, depending on composition and treatment of valves and seats, must, of course, be right, but as long as one engine has accidentally been produced that fills these demands it should unquestionably be possible to develop a line of engines that could be guaranteed to at least greatly reduce, if not entirely do away with, the greatest remaining expense in the operation of automobile engines.

I am fully satisfied that if some builder of automobile engines will go to the trouble of experimenting along the lines that this old engine has indicated, it will be possible to develop such a powerplant, a thing that would be of tremendous help and interest to the driving public.

OSCAR STROMBORG,
Los Angeles, Cal.

Jan. 25, 1930.

Front-Wheel Drives

Editor, AUTOMOTIVE INDUSTRIES:

Automotive Industries for Feb. 1 has just come to to my attention, as it has an article pertaining to front-wheel-drive developments, page 166.

As you know, I have for a number of years developed, designed and built front-wheel-drive axle equipments, not only for race cars, but also for passenger cars and trucks, and I have built complete front-wheel-drive vehicles.

In reading the article in *Automotive Industries,* I was immediately struck by the statements of R. C. Hoffman, about the positioning of the powerplant. Mr. Hoffman called on me and discussed this very matter with me previous to his departure for Europe. He wrote me from London, under date of Oct. 22, 1928, and enclosed pamphlets of the English Alvis and the Brasier front-wheel drive.

Mr. Hoffman, at the time he called on me, showed me his transmission design which was "patent-applied-for," and which, I believe, will solve the transmission problems in front-wheel-drive cars. I am sure that it will be interesting to observe the performance of the two cars which Mr. Hoffman now is building.

The application of a radial type engine to front-drive passenger cars, as covered by my patent applications, is just another step in bringing about adaptation of the front-wheel-drive design. The solution of the problem of axle design, which involves the difficulty of overcoming the handicap of a large turning radius, as has been the case when the universal joint has been placed inside of the wheel, was immediately solved by the positioning of the wheel universal, as outlined in my patents.

FINN S. HUDSON.

Feb. 17, 1930.

Developments in Design

Editor, AUTOMOTIVE INDUSTRIES:

In the issue of *Automotive Industries* of November 23, 1929 (p. 763), there appeared an article by A. Ludlow Clayden captioned "Few Original Inventions Survive in Their First Form." In this connection we would like to hear what the automobile manufacturers and engineers have to say regarding two very important questions he makes:

1. Why is it still necessary to employ someone to get underneath and dirty himself most thoroughly in order to remove old oil from a crankcase?

2. There have been literally dozens of better ways of putting tires on rims or rims on wheels invented, tested and proved excellent, but where are they and why are they where they are?

These are two very interesting questions. Considering that the "two-car" families are ever increasing, not only in the United States but all over the world, with the introduction of the cheap motor car, keeping them fit and well-greased has become a burdensome job. And we dare predict that the "three-car" families are coming within a few months.

Ford has practically solved question No. 2 in his model A cars by the adoption of the "well-base" (drop center) scheme. That is probably one of the reasons why Ford model A cars are so popular. Certainly one of the most uncomfortable jobs a motorist has to reckon with is tire changing. We see no sensible reason for the existence of the split flat-base rim even in 1930 models with the introduction of the drop-center rim to the trade. Split flat-base rims are wholly unscientific; they are heavy and unbalanced, they get out of true when much used; they require special tools, and when the locks and hinges get rusty (this is very common in the tropics) they become useless. Even the tires are damaged by the sharp split edges when slightly used or rusted.

Crankcase Oil Drainage

Question No. 1 however remains a puzzle. To prove our point, your attention is invited to an editorial article, "Crankcase Oil Drain,," which appeared in *Automotive Industries* of April 30, 1925 (p. 795), in which some automobile manufacturers were praised for their thoughtfulness in providing a drain cock which can be opened by means of a handle located at the side of the engine. The Studebaker Model ER six (Dictator) had such an equipment. Just why they have eliminated this useful device in the later models including the 1930 series is beyond our power of reasoning. The only probable account for dropping it is perhaps economic reasons. Over four years have elapsed since the publication of the above-mentioned editorial article but apparently few automobile manufacturers have given it any thought and still others have ignored it completely by dropping a device which they already had incorporated in their engines.

Let us hope that American manufacturers pay more attention to the owner-driver's comfort in designing their cars in the future. With the exception of the balloon tire which was developed simultaneously by European and American engineers, such designs as four-wheel brakes, drop-center rims, hydraulic shock absorbers, sunshine roofs, high speed engines, four-speed transmissions, independent wheel suspension, front-wheel drive, free-wheel transmission, Diesel engines for passenger cars and airplanes, and the straight eight engine are all European creations. Let us hope that some of the above designs make their appearance in American cars. Other improvements may be introduced, such as the "four-wheel jack." This would be a strong selling point if added to any modern car the road clearance of which is being reduced each year.

CENTRAL CHEMICAL CO.,
Manila, P. I.
B. F. Legarda, General Manager.

(We believe that developments in connection with service facilities in this country furnish the answer to both of our correspondent's questions. More than 85 per cent of the passenger cars manufactured in this country are sold at home, and engineers therefore design chiefly to meet home requirements. Now, we believe that comparatively few American motorists today, at least of those living in cities and towns, renew their own crankcase oil and take their tires off the rims themselves. In recent years service stations for both lubrication and tire work have become quite numerous and do the work both efficiently and economically. To a properly equipped service station the troubles to which our correspondent refers are practically non-existent. For instance, the service station employee who drains crankcases stands in a pit, and therefore can open a cock more readily in the bottom of the crankcase than a cock with what might be called remote control, at the side of the engine under the hood. Tire service stations are equipped with mechanical appliances for removing and replacing rims. The rims, moreover, are rust-proofed, and so far as our observation goes, are usually handled with ease, although it is quite conceivable that after long service under conditions where rust-promoting influences are very strong, they might give trouble. We realize also that in the tropics trouble from corrosion is especially severe.

The drop center rim is a development of the bicycle era and has been with us for nearly fifty years. Evidently the advantages are not all on its side, or its use would be more general. We are under the impression that it is not very suitable for use with wood wheels, which up to recently were the most widely used type.

Engine Speeds

We do not care to enter into a discussion with respect to all of the features of car design which our correspondent says are European creations, except to the extent of remarking that a tremendous amount of engineering work was required to make it possible to build stock engines operating at the speeds that are common today, and we are not at all sure that more of this work was done by European than by American engineers. Engine speeds should be compared on the basis of piston speed, not crankshaft speed. To make an engine with 2 by 3 in. cyclinders turn over at 4000 r.p.m. is not nearly the same accomplishment as to make an engine with 3 by 4 in. cylinders operate at this speed.

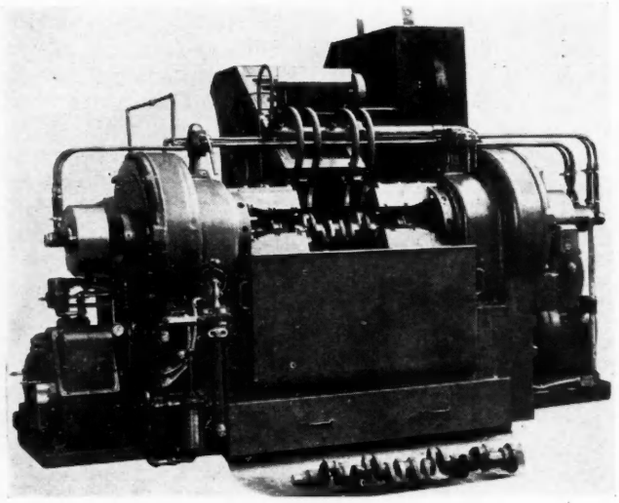
In connection with crankcase drain cocks operated from under the hood, it has occurred to us that there may have been other reasons for their disappearance besides developments in service conditions, and if any of our readers can throw further light on this subject it would be appreciated. The rim question, of course, is also open for discussion).—*Editor.*

THE third International Congress for Automobile Standardization will take place at Milan, Italy, April 23-26 in connection with the automobile show there which is a part of the Milan international sample fair.

NEW DEVELOPMENTS—Automotive

Automatic Crankshaft Line Bearing Lathe

A NEW Hydraulic Lathe for turning crankshaft line bearings was recently introduced by the Le Blond Machine Tool Co., Cincinnati, Ohio. This machine, known as the 5-ACL, turns the stub and flange end and four intermediate line bearings. It is built with two types of drives, namely, the double end drive and the center drive, which are preferably used as a battery. The crankshafts come to the double end drive machine



Le Blond 5-ACL double-end drive automatic crankshaft lathe, with an eight-throw nine-bearing crankshaft in the foreground. This machine, and the center-drive lathe illustrated, form a battery for the operation described in the text

centered and with locating spots milled on the webs. The crankshaft to be turned is driven from both ends by air operated pot chucks which are mounted on spindles that roll on Timken bearings. The chucks are so designed that it is impossible to spring the crank when chucking it.

The crankshaft is taken from this machine to the center drive machine shown where it is clamped on the web by two special equalizing clamps with locating spots so finished that the shaft will not spring out of alignment. It is located from the previously turned intermediate line bearings done in the first operation.

The tools in both machines are actuated in an identical manner. A hydraulic cylinder is located in a compartment in the center of the machine and through a rack and segment transfers the motion to a large shaft, which in turn actuates the tool bars by means of a toggle arrangement. At a given piston speed, the speed of the tools automatically decreases as they approach the end of the cut. This feature gives a positive and powerful feed to the tool bars with a very large displacement of oil in the hydraulic cylinder. The front and rear tools are arranged to feed toward each other, this reducing the tendency of the crank to spring. Side thrust is taken up by bronze plates which are rigidly secured to the base.

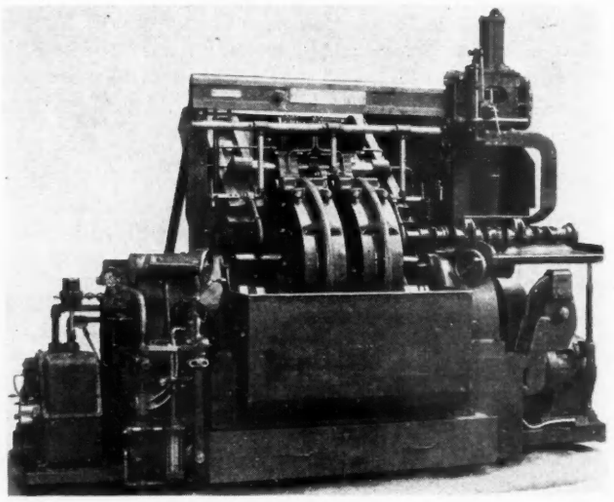
The use of tools of the vertical bit type makes possible the removal and replacing of tools without changing the diameter setting of the machine. The front tool rough faces the web and finish turns the bearing, while the rear tools check and finish-face the web.

In the double end drive machine, the air is so connected as to make it impossible to start the machine if the pressure falls below a safe minimum, while in the case of both machines it is impossible to traverse the tools into the work since the cam plate acts as a positive lock to the power traverse.

To operate the double end drive machine, the crankshaft is placed in the pot chuck, the air operated center locates the crank, and the crankshaft is clamped by the air-operated pot chucks. The motor control switch is pressed to the starting position and when released, it automatically drops back to the running position. The traverse can then be engaged. The tools traverse to the work, feed to the proper depth, and then return to the starting position, whereupon the spindle stops automatically. The air valves can then be closed and the finished shaft removed.

In the center drive machine the operation is the same, except for the loading operation. The crank is placed between the centers on the carrier. The carrier is removed, the centers are adjusted and the clamps locked in position. The cycle of operations is the same as that of the double end drive machine.

Production is limited only by the possibilities of the



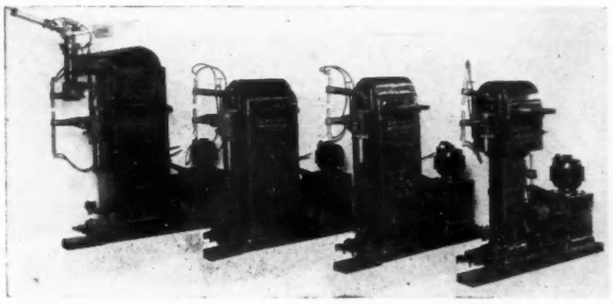
Le Blond center-drive automatic crankshaft lathe

crankshaft and tools. The normal production generally averages between 10 and 25 pieces per hour, depending on the cranks.

Acme "Hot-Spot" Welders

A COMPLETE line of motor-driven spot welders ranging from 12 in. to 24 in. throat depth is announced by the Acme Electric Welder Co., Huntington Park, Cal. The speed range is adjustable and is approximately 40, 60, 80, 100 and 120 welds per minute. The machine is actuated by a slight toe pressure on a foot treadle and continues in operation as long as the treadle is depressed. The welder motion stops immediately by releasing the treadle,

Parts, Accessories and Production Tools



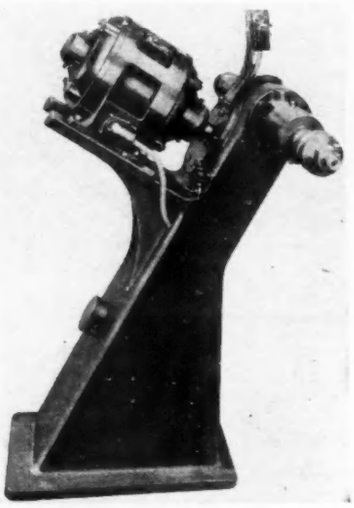
Acme Electric line of motor-driven spot welders

so that a single spot weld or a succession of spot welds may be made at the option of the operator.

An added feature is the Butt welding attachment which clamps on to any spot welder having two-inch horns by removing only the electrodes. Current is controlled by a foot treadle which is readily attached. This attachment can be operated at the same speed as a butt welder of the transformer capacity of the spot welder to which it is attached. Capacity is up to $\frac{5}{8}$ in. diameter in round solid stock and up to 1 in. outside diameter round tubing. The entire line of welders uses a standard $\frac{3}{4}$-hp. motor, vertical type, operating on 220-440 volts, 50-60 cycle, single phase, A.C.

Crown Overhang Lathe

AN overhanging type lathe for polishing and buffing long and curved parts such as bumper bars, radiator shells and fenders is announced by the Crown Rheostat & Supply Co., Chicago, Ill. This new direct drive lathe is built with an overhanging spindle which is brought forward 10 in. from the normal position. This brings the spindle 4 in. in front of the face of the stand, which permits a much greater working radius in handling this class of work.



Crown overhanging lathe

The spindle is driven directly by the motor through a spiral gear drive having a phosphor bronze driven gear and a steel driving gear. Both the motor armature and the lathe spindle are mounted on ball bearings.

Weldite Fluxed Rod

WELDITE C-NO. 6 FLUXED, a new rod designed for carbon arc welding, is announced by the Fusion Welding Corp., Chicago, Ill. This rod is particularly adaptable for the welding of mild steel plates and castings. It is claimed that the welding speed has been substantially increased and that the deposit is strong and ductile, being more readily machinable than deposits made with the usual filler rod for carbon arc process.

The makers state that flux coating causes the arc to pull from the hottest part of the weld puddle rather than to jump to the colder edges, as is usually the case with the carbon arc process. This facilitates manipulation of the arc and is said to enable operators to attain welding speeds considerably higher than is possible with the usual bare filler rod.

Photo-Electric Cell and Amplifier Unit

A PHOTO-ELECTRIC cell with an amplifier is now sold as a unit by the Westinghouse Electric & Mfg. Co. The photo-electric cell, often called the "electric eye," is a light-sensitive device. When light falls upon it, voltage having been applied to the cathode, a current passes by means of electron emission from the cathode to the anode. This current is very small, but, when amplified, operates commercial relays.

Westinghouse photo-electric cell and amplifier unit

The photo-electric cell has helped to make possible many operations previously considered impractical. It has aided in the perfection of talking motion pictures, television, automatic smoke detection, recording of smoke density and other accomplishments.

For some applications, complete apparatus has been developed and can be supplied as a unit; but for most applications where no standard apparatus is available, the photo-electric cell with its amplifier is sold as a unit to be applied by the customer. There is little doubt that some of the numerous problems which arise in automobile manufacturing plants will find their solution by the application of this cell.

Alumilite Coating

THE Metals Protection Corporation, Indianapolis, Ind., announces a new method of applying a protective and decorative coating to aluminum and its alloys, known as Alumilite. It may be had either in a silvery white or in a variety of colors, including black and various shades of blue, yellow, red, brown, green and purple.

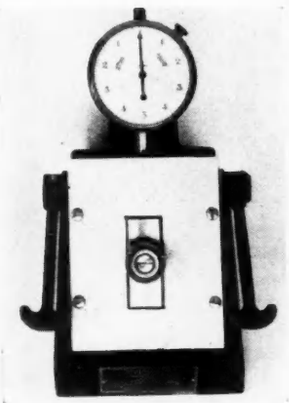
The coating is an integral part of the aluminum itself and is claimed not to crack, chip or peel off. Treated sheets may be stamped and formed without marring

the finish. It is claimed for the coating that it offers unusual resistance to atmospheric and salt-water corrosion, especially when applied to pure aluminum, and to be more resistant to wear than when nickel-plated. It will not withstand cutting with a sharp-pointed instrument but offers considerable resistance to such action. A blunt instrument will force the coating into the softer metal beneath without rupturing. Tests with the Bierbaum apparatus are said to have shown that the hardness of the coating is equivalent to that of medium-hard steel.

In the automotive industry the process has been applied to finishing automobile trim.

Small Hole Gage

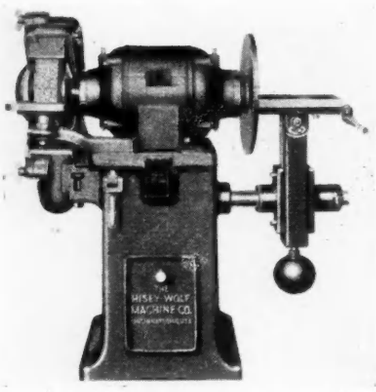
RAPID inspection of holes ranging from ⅜ in. to 1½ in. diameter within 0.0001 in. is provided by the Model 36 Federal gage which was recently announced by the Federal Products Corp., Providence, R. I. It can be operated from either the right or left-hand side and parts can be gaged as rapidly as the operator can place them on the jaws. The indicator is graduated in 0.001 in., is 2¾ in. in diameter and the graduations representing 0.001 in. are ¾ in. apart. Jaws are furnished in four different sizes, ⅜ in. to ½ in.—½ in. to ¾ in.—¾ in. to 1⅛ in.—1⅛ in. to 1½ in.



Federal Model 36 gage

Combination Stand Grinder

A NEW heavy duty combination disk and floor stand grinder is offered by the Hisey-Wolf Machine Co., Cincinnati, Ohio. The spindle is of heavy construction which is said to insure concentricity of the disk. It is mounted on two annular ball bearings and a self-aligning double-acting thrust bearing is provided to take all end thrust. The disk is 20 in. diameter while the wheel is 18 x 3 in. This machine is provided with a full safety combination wheel guard and an automatic safety motor starter work table. The universal lever feed table shown is 8 x 14½ in.; a plain work table, 9½ x 10½ in., can be provided where specified.

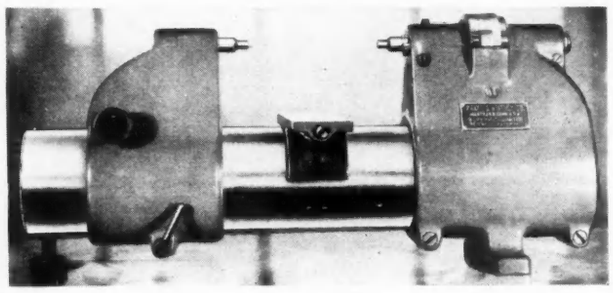


Combination desk and floor stand grinder

The motor is 5 hp. capacity, 40 deg. C type, fully enclosed. It is available for 220 volt, 3 phase, 60 cycle or 440 volt, 3 phase, 60 cycle. (Special specifications on application.) Size of base is 20 x 21 in.; net weight, 1300 lb.

P & W Super-Micrometer

REPRODUCIBLE readings accurate to one ten-thousandth of an inch and a working range of 8 in. feature the Super-Micrometer recently placed on the market by the Pratt & Whitney Co., Hartford, Conn. Both the fixed headstock, containing the measuring spindle, and the movable tailstock are mounted on a rigid cylindrical bed of large diameter, having a three-point support. The machine has a range of 8 in. between anvils, a height of 2¾ in. between the spindle center and the top of the work tables, and a height of 3¼ in. between the spindle center and the bed.

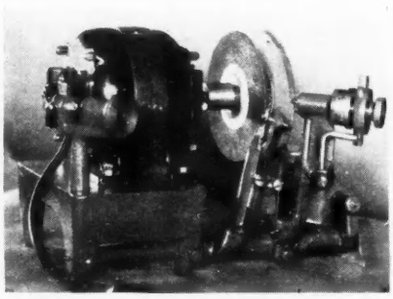


Pratt & Whitney Super-Micrometer

The measuring spindle has a travel of 1 in. and is graduated with markings 0.050 in. apart which represent one revolution of the index wheel. A vernier, controlled by a small thumb wheel geared to a rack cut on one end of the vernier, furnishes a positive adjustment without the necessity of a lock. Thus the index wheel reads to thousandths of an inch, and the vernier gives positive readings to ten-thousandths.

Drill Grinder and Thinner

A BENCH type drill grinder and drill point thinner for drills up to ¼ in. diameter, has been announced by the Wells Manufacturing Co., Greenfield, Mass. The drill is held in a draw-in chuck mounted in a quill which has a draw-in rod. This assembly is then inserted into the grinding fixture at the right where the point is ground. A special cam and swing motion said to facilitate the operation and insure accuracy is a feature of this machine. The drill point is thinned on the thin emery wheel while held in a special fixture.



Wells drill grinder and point thinner

A wheel truing diamond and a rack for holding the spring chucks are standard equipment. The motor is 1/6 hp., 110 to 220 volts, A.C. or D.C.

Oxweld Steel Welding Rod

OXWELD ACETYLENE COMPANY, New York, has placed on the market a welding rod for making extra strong welds in steel. It is known as Oxweld No. 22 S.D. (strength and ductility) steel welding rod, and has been developed specially to meet the demand

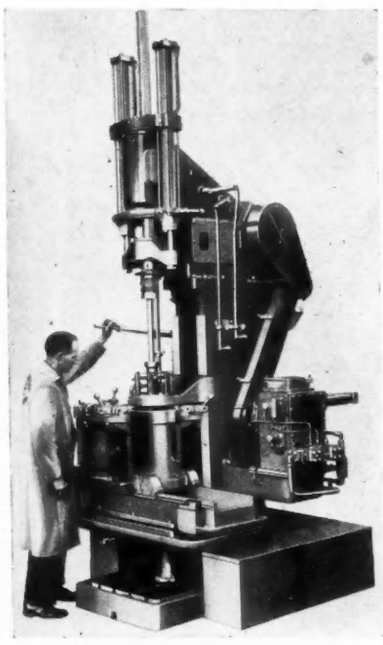
for 100 per cent joints in steel pipe having a carbon content of 0.30 to 0.40 per cent, which has recently come into use. In general appearance, weldability, chemical and physical properties No. 22 S.D. rod is similar to the well-known Oxweld No. 1 high test rod, but it will produce welds of even higher tensile strength.

Four-Wheel Jack

A HYDRAULIC jack by means of which all four wheels of a car can be jacked up simultaneously or any one independently is being manufactured in England by S. Smith & Sons (M.A.), Ltd., of London, under the trade name the Jackall. It consists of four small hydraulically-operated telescopic jacks, permanently fitted close to each wheel and connected by tubing to a distributor pump mounted on the running board in a convenient position. The distributor valve is provided with a handle having an arrow on it. If a single wheel is to be raised from the ground the handle is turned so the arrow points in the direction of that wheel, while when all four are to be raised at once it is turned so the arrow points straight back. After the distributor has been set a few strokes of the jack handle quickly raise the wheel from the ground, according to the manufacturer. No more effort is required to lift all four wheels at once, but, of course, four times as many strokes of the pump handle are required.

Vertical Honing Machine

FOUR quick change spindle speeds, 32 in. stroke, and a maximum capacity of 20 in. diameter, feature the No. 2420 Vertical Medium Duty Honing Machine which has been announced by the Barnes Drill Co., Rockford, Ill. This machine is especially adapted for Diesel engine cylinders and liners. It is hydraulically operated by the WEA Oilgear pump controlled by a special operating lever arrangement which simultaneously controls the multiple disk driving clutch.



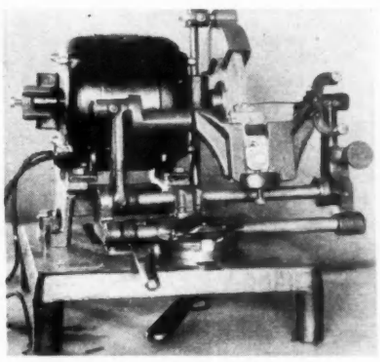
Barnes vertical medium duty honing machine

The ten-splined hone spindle has a stroke of 32 in. The long honing stones are said to provide extreme accuracy particularly because of a patented method of air-counterbalance balancing of the spindle and hone assembly. Large diameter cylinders if reamed within 0.005 in. to 0.008 in. of size, may be accurately honed within 0.001 in. The long honing stones also pass over port holes and recesses in cylinders, leaving a true edge about these openings. Soft steel cylinders such as hydraulic cylinders should be smoothly bored or reamed within 0.001 in. or 0.002 in. of the finished size. Automatically expanding hones operating in steel sleeves may also be used for quantity production of cylinders of a particular size.

Motor specifications vary with operating conditions; for cylinders up to 10 in. diameter 10 hp. at 1200 r.p.m. is recommended; for cylinders 10 in. to 15 in. diameter, 15 hp. at 1200 r.p.m.; and for cylinders 15 in. to 20 in. diameter, 20 hp. at 1200 r.p.m. The working surface of the table is 18 in. x 28 in., while its vertical travel is 23 in. Floor space is 56 x 64 in. and the net weight 6000 lb.

Bench Type Cutter Grinder

ROUND cutters ⅛ to ½ in. thick and 2 to 4 in. diameter may be sharpened on the handy bench type cutter grinder just placed on the market by the Wells Mfg. Co., Greenfield, Mass. The universal fixture is adjustable horizontally and vertically for any tooth form, the spacing being accurately indexed by an indicator which rests on the tooth. A special fixture may be provided to handle cutters of larger size and for special purposes.



Wells bench-type cutter grinder

The motor is 1/6 hp., 110 to 220 volts, A.C. or D.C.

TREND TOWARD EXCLUSIVE DEALERSHIPS
(Continued from page 465)

the total population of the United States.

Sales per dealer in this zone averaged 67 for the four-year period, and reached the peaks of 84 in 1926 and 1929. This zone suffered a slump of 50 per cent in sales per dealer in 1927, as compared with 1926.

In 1929 dealers in these states sold 755,500 passenger cars, a gain of 116,020 units or a gain of 17 per cent, as compared with the gain of 24 per cent in the United States as a whole.

Prairie and Mountain States netted fewer cars sold per dealer than any other groups of commonwealth in the United States. Iowa, Kansas, Minnesota, Missouri, Nebraska, and North and South Dakota, the West North Central Group (Zone V), showed an average of 31 cars per dealer for the four-year period, reaching but 51 in 1929. In 1926, only 12 cars per dealer were sold. The figures of this compilation show that acute depression was felt in the entire area that year, due largely to a generally poor agricultural year. A large number of commercial and bank failures were reported in this area by the Federal Reserve Bank. The bank failures were among the state and private banks which affected the buying power in the small towns throughout the zone.

Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah and Wyoming (Zone VIII) showed an average of only 34 cars sold per dealer for the four years, the average reaching 55 in 1929, a gain of 25 per cent over the 1928 average of 44 cars per dealer. The lowest ebb during the past four years in this zone was reached in 1927 when but 26 cars were sold by each dealer, on an average.

Automotive Oddities *by Pete Keenan*

THE EXPENSIVE ENGINES OF THE BRITISH SCHNEIDER CUP SEA PLANES ONLY HAD AN APPROXIMATE FLYING LIFE OF SEVEN HOURS.
MAGNET USED TO PICK UP NAILS ETC., FROM MISSOURI HIGHWAYS.
BUENOS AIRES TO TRY NOVEL PARKING PLAN. BUILDINGS THE BASEMENT OF WHICH PERMIT PARKING ARE EXEMPT FROM CERTAIN CITY TAXES FOR EIGHT YEARS.
A HORSE'S GRAVE BLOCKS PROJECT TO WIDEN ONE OF TEXAS MAIN HIGHWAYS
Ballenger Texas.
R.I.P
COLEY
HORSE OF DR. FOWLER
JOYLAND
PIKE
NO SPEEDING
IN 1906 THERE WAS AN ORGANIZED PROTEST BY MOTORISTS AGAIN'ST THE HABIT OF POLICEMEN SHOOTING HOLES IN TIRES OF CARS WHICH DID NOT STOP ON COMMAND.

First with the News

Reliable, Accurate

News of the Industry

PAGE 489 VOLUME 62 *Philadelphia, Saturday, March 22, 1930* NUMBER 12

Production Shows Tendency to Gain

Weekly Average Below Last Year But Improvement Seems Established

PHILADELPHIA, March 22—Passenger car production in the United States and Canada for the week ended March 15 showed a gain of 1.3 per cent over the previous week, according to the telegraphed reports to *Automotive Industries*, and figures from other sources used in the Weekly Production Index on page 491. Schedules of many of the reporting companies showed a tendency to increase with the approaching end of the first quarter.

Despite the fact that it had only 28 days, United States production of motor vehicles in February, totaling 323,962 units, was the highest since last October, with its 31 days, when the output was 380,017 vehicles. The February recovery reflected a gain of 50,790 over the January output of 273,170, according to reports received by the Department of Commerce.

The February total consisted of 275,811 passenger cars, 47,129 trucks and 1022 taxicabs. The passenger car output exceeded that of January by 41,285, while the truck production total surpassed that of January by 9058, and the taxicab total was 450 greater than that of January.

Canadian production of motor vehicles in February, totaling 15,548 units, was greater than any month since last July with an output of 17,461. The February output exceeded that of January with a total of 10,388, by 5460. Of the Canadian production in February, 13,021 units were passenger cars as against 8856 in January and 2577 trucks, as compared with 1532 in January.

The export valuation of all automotive products for the month of January amounted to $31,166,674, an increase of $3,983,095, or 14.7 per cent, over the preceding month, but $16,426,981 under January, 1929.

Combined passenger car and truck shipments during the first month of the year, valued at $18,690,729, were $2,027,385, or 12.2 per cent, higher than the December total, although $7,145,107, or 27.6 per cent, under January of last year.

American Engineers Plan Mexican Trip

WASHINGTON, March 20—A delegation of more than 125 highway engineers and road building executives will journey to Mexico City in April to attend the third highway congress of the Mexican national highway commission, it was announced here today. Maj. Frederic A. Reimer, president, and Charles M. Upham, engineer-director of the American Road Builders' Association, will be joined by the Association's executive committee in forming a party to leave Washington.

Peerless Plans New Issue

CLEVELAND, March 19—Peerless Motor Car Corp. proposes a new stock offering, which if approved by stockholders at the annual meeting April 8 at Richmond, Virginia, will net the company $2,168,712 additional capital and preclude any necessity of borrowing from banks. There are 258,589 shares of $50 par stock outstanding. Holders are given the right to subscribe share for share for additional stock at $8.00. The annual meeting will be asked to reduce the par value from $50 to $10 through collaboration of Eastern and Cleveland capital. One-half of the proposed issue has been underwritten. The money has been guaranteed by individuals, and is said to be a testimonial to the management. Peerless now has between $7,000,000 and $8,000,000 working capital. The new setup would give a net worth approximating $50,000,000, half of which would be in capital and half in surplus.

Auto-Lite to Aid Soviet

NEW YORK, March 18—The Amtorg Trading Corp. announced yesterday the signing of a contract between the United Electrical Industries of the Soviet Union and the Electric Auto-Lite Co., of Toledo, Ohio, providing for technical assistance by the American firm in the production of electrical equipment in the U.S.S.R. The agreement provides for the preparation by the Auto-Lite Co. of a detailed layout and working project for a plant to manufacture complete electrical units for automobiles and tractors. It also calls for the furnishing of engineers.

Wide Truck Program Started by Chamber

Extension of Education Fund Permits Five-Year Program

NEW YORK, March 19—An intensive educational campaign to secure a wider acceptance of the utility of the motor truck, and to combat repressive legislation is being launched by the Motor Truck Committee of the National Automobile Chamber of Commerce. For this purpose the committee will spend $30,000, in addition to its regular appropriations during the remainder of the year and has greatly augmented its staff.

The additional financing has been secured through the authorization of the board of directors of an appropriation of $10,000, with the recommendation that the members of the chamber appropriate an additional $5,000 at their annual meeting in June. There has been raised from voluntary contributions from truck members of the chamber an additional $17,400, to meet the expenses of this campaign.

The campaign consists of a far-reaching educational program, planned to extend through a minimum of five years, and exercising its efforts in various directions.

Among the programs outlined is one known as the better driving campaign, which will be directed toward the truck drivers and operators themselves, attempting to educate them in the value of safety and courtesy in actual operation. This campaign is being conducted through the issuing of a number of bulletins, which are at present going to manufacturers' house organs, chambers of commerce, truck associations, trade boards and other industries which are affected by truck operations.

Bendix-Hydraulic Merger Advanced

NEW YORK, March 19—Word has been received today that sufficient stock in Hydraulic Brake Associates, Ltd., has been deposited to guarantee the consummation of the merger of that company with Bendix Aviation Corp.

The merger is taking place on the basis of exchange of stock, six shares of Hydraulic being exchanged for five shares of Bendix.

Men of the Industry and What They Are Doing

Durant Appoints Sproul

It was learned definitely at Lansing recently, although the report has not been confirmed by officials in the Detroit administrative offices, that Brawn Sproul has been appointed traffic director of Durant Motors, Inc. Mr. Sproul is succeeding W. J. Dalley, who went to Lansing a year ago from the Elizabeth, N. J., plant of the Durant Co. It is reported that a number of major personnel changes in the Durant organization probably involving men who have come on from Elizabeth are in project, but no definite information could be obtained at the administrative offices of the company in Detroit.

Mr. Sproul has been connected with the Lansing plant of Durant for the past eight years. He was traffic manager of the Lansing unit when the central office of the company was in Elizabeth. A year ago he left the traffic department to enter the manufacturing division. Mr. Sproul has been in traffic work for 22 years, having previously been with Chevrolet and also with General Motors in Saginaw, Mich. Mr. Dalley, who lives in Lansing, has announced no immediate plans for the future, but he and his family will leave for the East shortly.

Oakland Appoints Tyrrell

D. U. Bathrick, Detroit zone manager for the Oakland Motor Car Co., announces the appointment of H. A. Tyrrell as Detroit branch manager to succeed H. A. Grubb, who recently resigned. Mr. Tyrrell, a native Detroiter, has devoted his entire career to the merchandising of automobiles, his experience dating back to the days of the Apperson car. Prior to joining the Oakland organization Mr. Tyrrell for three and one-half years was sales manager for the Detroit retail store of the Chevrolet Motor Co. in the General Motors Bldg. He started with Chevrolet as a retail salesman in 1922.

U. S. Rubber Names Hammond

G. N. Walker, advertising manager of the tire department of the United States Rubber Co., has announced the appointment of C. M. Hammond, as assistant advertising manager. Mr. Hammond was recently in charge of Dealers' Cooperative Advertising and Sales Promotion. Previous to that he was regional sales promotion manager for the Chevrolet Motor Company.

Fruehauf Appoints Two

F. E. Boylan has been appointed Detroit branch manager in charge of all Michigan territory of the Fruehauf Trailer Co., Detroit. He has been connected with the company for the past two years and previously served as Pittsburgh branch manager for the Federal Motors Truck Co. He was formerly connected with the Sewell Cushion Wheel Co. for a period of eight years as sales manager. O. F. Neumann has been appointed sales manager for the Detroit City territory of the Fruehauf Trailer Co. He has been a member of the Fruehauf organization for the past 20 years and is well known in automotive circles throughout this part of the country.

Midland Appoints Begg

R. S. Begg, until recently chief engineer of the Stutz Motor Car Co., Indianapolis, and before that chief engineer of the Budd Wheel Co., and associate engineer of the Edward G. Budd Mfg. Co., has been appointed chief engineer for the Midland Steel Products. Announcement of the appointment was made by E. J. Kulas, president of the company. Mr. Begg was also one of the organizers of the Jordan Motor Car Co. and was chief engineer of that company from 1916 to 1928.

Curtis Joints Kearney

Frank W. Curtis has joined the Kearney & Trecker Corp., Milwaukee, as research engineer, according to an announcement from the company. Mr. Curtis was formerly connected with P. R. Mallory and Co., Indianapolis, as chief engineer in charge of carboloy manufacturing.

American Names Martin

Frank J. Martin has been appointed vice-president and sales manager of the American Auto-Felt Corp., Grand Rapids, Mich., according to an announcement from the company. Mr. Martin's former associations have been with Durant, Hayes Body Corp., and General Motors.

Olds Appoints Fulton

The appointment of Vincent M. Fulton as midwest regional manager of Olds Motor Works, is announced by J. T. Collins, general sales manager of the Oldsmobile-Viking organization. Mr. Fulton succeeds L. J. Blunden, who recently was appointed assistant general sales manager of the company.

Horner Is Appointed

Robert A. Horner, salesman in the Rockford, Ill. territory, has been appointed acting sales manager of the machine and small tool division of the Barber-Colman Co., to fill the position left vacant by the death of Frank Hoffman several weeks ago.

Detroit Foundry Names Hill

The Detroit Gray Iron Foundry Co. has announced the appointment of Theodore Hill as sales manager.

Reo Appoints Hanchett

W. A. B. Hanchett, president of the Reo Motor Car Co. of California, and one of the prominent West Coast figures in the automobile industry, has just been appointed zone manager for Reo in the nine western states including Washington, Oregon, California, Idaho, Nevada, Utah, Arizona, Colorado and New Mexico, according to announcement from Reo headquarters in Lansing, made by Clarence E. Eldridge, sales manager. Mr. Hanchett has been active in California automobile circles since the early days of the industry, and has been associated with Reo since 1927, when he was retail pleasure car sales manager.

Reichard on Latin Circuit

E. L. Reichard, export manager for the LaFrance-Republic Corp., Alma, Mich., started recently on a three months' trip which will take him to all of the principal cities of Mexico, Cuba, Central and South America. During his travels, Mr. Reichard will call on each of the many LaFrance-Republic distributors in these countries, analyzing the truck markets in every important trading center, and familiarizing himself with the truck transportation problems which face each of the various communities visited.

Bonbright Leaves Graham-Paige

John M. Bonbright, who has directed Graham-Paige publicity for the last two years, has resigned, and will sail for Europe March 29. He plans to spend a year touring the Continent and the British Isles by motor car.

Independent Elects Hamerly

Directors of the Independent Pneumatic Tool Co. elected Frank B. Hamerly vice-president in charge of manufacturing at the annual meeting on March 12.

St. John Joins Long

Frank St. John, formerly with the Bendix Aviation Corp., has severed connections with that company and has accepted a position as sales engineer with the Long Mfg. Co., Detroit, Mich.

Celotex Elects Mott

Charles S. Mott of Flint, Mich., a vice-president of the General Motors Corp., has been elected a director of the Celotex Co. of Chicago.

Morse Sails for Europe

E. C. Morse, president of the Chrysler Export Corp., recently sailed for Europe. He plans to be gone for from two to three months.

Automotive Steel Demand Regarded as Favorable

Competition for Detroit Business Keen, Prices Steady

NEW YORK, March 20—There has been an increase in the demand for steel products from automotive consumers, especially from parts makers, in the last few days. The most encouraging feature of this increase is not its extent in tonnage, which is of moderate proportions, but the generally held belief in the steel market that from now on automotive buying will slowly broaden and that a start in that direction is now being made.

Competition for Detroit business continues keen. The $2 per ton advance in black sheets, which has been talked of for a long while, is still more or less a nominal affair, but producers continue hopeful. Meanwhile, concessions have been very much in evidence in nearly all descriptions of finished steel products. In the Chicago market, a few transactions ln steel bars are reported to have taken place at 1.90 cents, the market generally being quoted at 1.95 cents.

There has been considerable hesitancy in announcing second-quarter prices, and the general impression in the market is that first-quarter prices will apply to what business will be placed over the remainder of the month for second-quarter shipment. The future course of prices depends wholly upon the volume of business that will come out between now and the beginning of April.

With many orders on the books of mills at concessions, there is much room for improvement of prices without out-and-out advances. Full prices on the basis of prevailing quotations would in themselves reflect the better demand. Bolt and nut prices are unchanged, and quite a little business is coming to mills.

Pig Iron—Blast furnace selling agents report that during the last fortnight bookings have been very satisfactory. The Valley, Cleveland, and Detroit markets show no quotable change. In Chicago there has been some talk of a 50 cents reduction in foundry, but some of the most important market factors believe that the $19.50 price for No. 2 foundry will hold in that market.

Aluminum—The market is dull. Prices for remelted metal have eased off slightly, and scrap prices have been generally marked down.

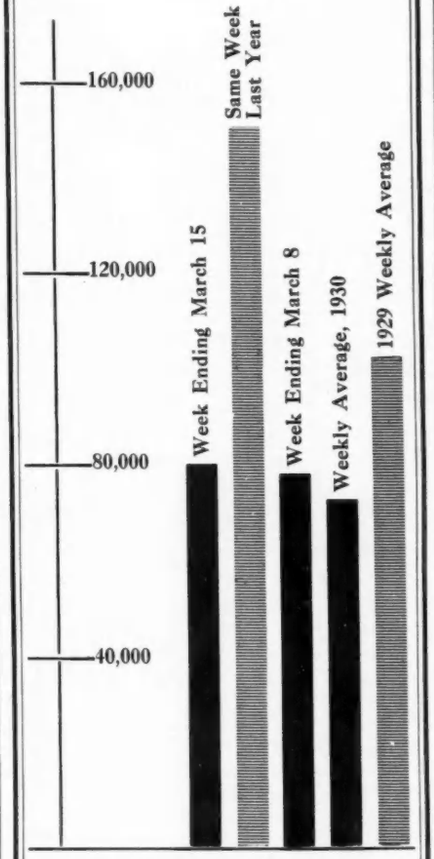
Copper—Despite numerous Wall Street reports that producers were contemplating announcement of price reductions, the market remains unchanged and of a strictly routine character.

Tin—The market opened the week with little change in quotations or sentiment. Prompt Straits tin was offered at a shade under 36 cents. Consumers appear to be well supplied.

Lead—Stocks and production have declined. Storage battery manufacturers have been consistent buyers since the decline, and are well covered. Producers are considering measures to curtail output further.

Zinc—Curtailment of activities at smelteries in the West is reported.

Automotive Industries Production Chart Weekly



The composite chart appearing above will delineate each week production of passenger cars in the United States and Canada, for the week preceding publication of the issue in which it appears, together with production for the preceding week, and other factors. Data used in compiling it are obtained in confidence from a number of sources. Other factors may be added, dependent upon the cooperation of additional sources of information.

Detroit Gear Gains

CHICAGO, March 18—Unfilled orders on the books of Detroit Gear & Machine Co., subsidiary of Borg-Warner Corp., on March 1 totaled in excess of $2,000,000, an increase of 52 per cent over unfilled orders on March 1, 1929, C. S. Davis, president of Borg-Warner Corp., said today. Orders received from three large automobile manufacturers in the last thirty days totaled over $750,000.

Lycoming Releases Gain

WILLIAMSPORT, PA., March 17—An increase of 100 per cent in automobile truck motors released for shipment as of March 1, compared with December 1, beginning of the first quarter of the fiscal year 1930, was reported today by W. H. Beal, vice-president of Lycoming Mfg. Co., division of Auburn Automobile Co.

Houdaille-Hershey Earned $4.64 per Share in '29

Annual Report Shows Adjusted Net Gain

CHICAGO, March 17—The Houdaille-Hershey Corp. for the year ended Dec. 31, 1929, showed net earnings of $2,819,669, after all charges, including Federal taxes, according to the annual report issued to stockholders by Claire L. Barnes, president.

After dividend requirements for the year on 174,849 shares of Class "A" stock, these earnings are equivalent to $4.64 a share on the 513,383 shares of Class "B" stock outstanding at the close of the year.

On the combined capital stock, Class "A" stock being convertible into Class "B" stock share for share, net earnings were equal to $4.10 per share. Houdaille-Hershey Corp. did not acquire General Spring Bumper Corp., and the Skinner Co., Ltd., of Canada until the middle of 1929. Adjusting earnings for 1928, to include those of the two acquired companies, net for that year was $2,256,821, after all charges including Federal taxes. Based on the stock outstanding as of Dec. 31, 1929, net earnings for 1928 were equivalent to $3.54 a share on the Class "B" stock, after Class "A" dividend requirements.

Penang Rubber Exports Gain

WASHINGTON, March 17—Declared exports of rubber from Penang, Straits Settlements, to the United States in 1929 totaled 148,778,655 lb., valued at $28,647,200, representing an increase of 53,247,110 lb., valued at $8,131,144, in 1928, according to a report received from Consul Samuel G. Ebling, Penang.

The report said that the quantity of rubber produced in Northern Malaya after the removal of restrictions exceeded expectation and increased demand resulted in large shipments to the United States. The increase in quantity sent to the United States last year was equal to 55.7 per cent of the total shipments of rubber from Penang in 1928. Lower prices prevented a proportionate increase in value. According to the export declarations one pound of rubber was worth 19.25c in 1929 as against 21.475c in 1928.

Bendix-Westinghouse Gains

CHICAGO, March 19—Westinghouse Air Brake, which recently joined with the Bendix Aviation Corp. in the formation of a new company to handle the brake manufacturing activities of the two companies, is experiencing a sharp increase in business, according to officials of the company, with about 150 per cent more orders on its books than at any time last year.

Institute Gets Engine Gift

DETROIT, March 19—New Hudson and Essex engines were presented recently to the college of engineering at the Detroit Institute of Technology.

Financial Notes

Checker Cab Mfg. Co. and subsidiaries report net income for 1929 after all charges of $4,280,416. This is equal to $11.41 a share on common stock and compares with profit of $816,809, or $2.18 a share for 1928.

Borg-Warner Corp. and subsidiaries report net income for 1929 after all charges of $7,682,590. This is equivalent after preferred dividends and minority stockholders interests to $6.03 a share on common stock, and compares with $4,610,831, or $5.45 a share, for 1928.

Marlin-Rockwell Corp. has declared regular quarterly dividend of 50 cents and an extra dividend of 50 cents, both payable April 1 to stockholders of record March 22.

McCord Mfg. Co. has declared regular quarterly dividend of 50 cents on common and $1.75 on preferred, both payable April 1 to stockholders of record March 20.

McCord Radiator & Mfg. Co. has declared regular quarterly dividend of 75 cents on Class A stock, payable April 1 to stockholders of record March 24.

Union Carbide & Carbon Corp. reports net profit for 1929 after all charges of $35,427,024. This is equivalent to $3.94 a share on outstanding stock and compares with earnings of $30,577,382, or $3.40 a share, on an even basis.

Allied Motor Industries reports net profit for 1929 of $211,600, or 47 cents a share, on common stock after preferred dividends. This compares with consolidated net earnings of the various units for the previous year of $340,317.

Paramount Cab Mfg. Co. has authorized the increase of its capital stock from 250,000 shares to 300,000 shares.

Spicer Mfg. Corp. and subsidiaries reports net profit for the year 1929 of $2,119,885, after all charges. This is equivalent after preferred dividends to $5.09 a share on common stock and compares with earnings of $2,609,533, or $7.12 a share, for the previous year.

A CORRECTION

Mack Trucks (International Motor Co.) has declared regular quarterly dividend of $1.50 payable March 31 to stockholders of record March 15.

De Haviland Aircraft of Canada has declared regular quarterly dividend of $1.75 on preferred payable March 15 to stockholders of record March 8.

Ex-Cell-O Aircraft & Tool Co. has declared regular quarterly dividend of 30 cents payable April 1 to stockholders of record March 21.

A. O. Smith Corp. reports net profit for the six months ended March 31 of $2,674,811. This is equivalent after preferred dividends and other charges to $5.25 a share on common stock and compares with earnings of $913,334, or $1.73 a share, for the corresponding period of the previous year.

McQuay-Norris Mfg. Co. has declared regular quarterly dividend of 50 cents payable April 1 to stockholders of record March 22.

Kelsey-Hayes Wheel Co. reports net profit for 1929 after all charges of $3,316,460. This is equivalent to $4.11 a share and compares with $1,202,220, or $2.67 a share, on stock outstanding at the end of the previous year.

Winton Engine Co. reports net income for 1929 of $863,085. This is equivalent after preferred dividends to $10.50 a share on common stock and compares with $403,130, or $7.83 a share, on stock outstanding at the end of the previous year.

Hupp Motor Car Co. has declared regular quarterly dividend of 50 cents payable May 1 to stockholders of record April 15. The company has omitted the quarterly stock dividend of 2½ per cent which it has paid quarterly since May, 1928.

Allis-Chalmers Mfg. Co., in its pamphlet report for 1929 shows net profit of $4,330,888 after all charges. This is equivalent to $3.81 a share and compares with $2,933,909, or $2.82 a share, for the previous year.

Michigan Registrations Gain

DETROIT, March 17—New passenger car registrations in the State of Michigan in January totaled 9913, which is a gain of 1143 cars, or 13 per cent, over the total of 8770 cars registered in the state in December. The January figure, however, shows a loss of 2666 cars, or 21 per cent, as compared with the figure of 12,579 for January, 1929. Ford registrations in Michigan last month totaled 5031, which is a gain of 392 over the 4639 registrations for this make in January, 1929. The January Ford registrations represent more than 50 per cent of registrations of all makes in the state. Chevrolet registrations last month totaled 2201. Essex was third on the passenger car list with a total of 333, Oldsmobile was fourth with 294, and Pontiac fifth with 244. Total registrations of commercial cars in the state last month were 1201, as compared with 1493 in the same month last year, a loss of 19 per cent. Ford showed a total of 570, while Chevrolet was second on the list with 368, and International third with 59.

Rowse Returns to England

NEW YORK, March 20—Arthur A. Rowse, production manager of Morris Motors, Ltd., who has been in this country for the past six weeks studying American production, sailed today on his return to England.

N.A.C.C. Appoints Hastings

NEW YORK, March 19—The National Automobile Chamber of Commerce has appointed Frederick A. Hastings to its legislative department, succeeding Richard S. Armstrong, who becomes head of that department.

General Motors Sales to Consumers Increase

Gain 19 Per Cent Over January of This Year

NEW YORK, March 21—During the month of February General Motors dealers in the United States delivered to consumers 88,742 cars, according to an announcement by Alfred P. Sloan, Jr., president. This compared with 110,148 for the corresponding month a year ago. Sales by General Motors manufacturing divisions to dealers in the United States amounted to 110,904 cars, as compared with 141,422 cars for the corresponding month last year.

As pointed out last month, the shortage of cars in January, 1929, influenced both retail and wholesale sales in that month and in February, 1929, both retail and wholesale sales increased substantially to take up part of the bank of orders remaining from January. This year there was no such shortage and the increase in February's sales and deliveries is more in line with the normal trend.

Total sales to dealers, including Canadian sales and overseas shipments, amounted to 126,196 cars, as compared with 175,148 in the corresponding month last year. Overseas shipments during February were again considerably below the figure for February, 1929, due to a continuation of the desire to adjust stocks in overseas countries in line with changed economic conditions.

The following table shows sales to consumers of General Motors cars in Continental United States, sales by the manufacturing divisions of General Motors to their dealers in Continental United States, and total sales to dealers, including Canadian sales and overseas shipments:

United States Sales to Consumers

	1930	1929
Jan.	74,167	73,989
Feb.	88,742	110,148

Sales to Dealers

	1930	1929
Jan.	94,458	95,441
Feb.	110,904	141,222

Total Sales to Dealers, Including Canadian Sales and Overseas Shipments

	1930	1929
Jan.	106,509	127,580
Feb.	126,196	175,148

These figures include sales of Chevrolet, Pontiac, Olds, Marquette, Oakland, Viking, Buick, LaSalle and Cadillac passenger cars and trucks.

Sterling to Tour South America

NEW YORK, March 19—The National Automobile Chamber of Commerce will send Henry S. Sterling of the export department on a tour of 150 cities in South America. Mr. Sterling will address public organizations on questions of the economics of motor transportation.

Reeves Warns Against Legislative Meddling

Tells A.A.A. Secretaries to Guard Rights of Motorists

NEW YORK, March 20 — Alfred Reeves, general manager of the National Automobile Chamber of Commerce, addressing the annual secretaries' conference of the American Automobile Association, called upon them to act as crusaders for the rights of motorists. The motorist today is too much overridden with "don'ts," he pointed out. Cities must have better parking facilities and should exercise greater judgment in establishing no parking areas, he said. Parking limitation can be considered only in conjunction with the study of the traffic situation as a whole, said Mr. Reeves.

Mr. Reeves also warned the secretaries to watch out for the diversion of state revenues received from motor taxes to uses other than improvement of the highways.

Another thing which Mr. Reeves finds in modern regulations is the tendency to punish the innocent motorist for the sins of the guilty. "It is unfair," he said, "and unjust to treat the great majority of orderly drivers as reckless because of the sins of the few.

"The A.A.A. should campaign for courteous and efficient treatment of the motoring public by the police and motor vehicle officials. An officer patrolling his beat is worth two in ambush."

Mr. Reeves also urged introducing warning signals at busy railroad crossings and the separation of busy highway intersections at grades. Wider roads and belt line roads are also needed, Mr. Reeves pointed out.

Miniger Fund Distributed

TOLEDO, March 19—Salaried employees of the Electric Auto-Lite Co. have received checks for $354,150 from the Miniger fund, established by C. O. Miniger, president of Auto-Lite, and provided out of his personal income from the company.

Final payments of $199,526 for 1929 distribution were paid this week, at same time Miniger announced a plan for a welfare fund for benefit of all workers in the plants of the company. Shop committees will administer the fund, which will be provided by the president out of his own income. This will supplement $1,500 life insurance carried on each employee for benefit of families. There are now 3708 employees on payroll here, and average wages are 10 per cent higher than at same time last year, and is highest level in 19 years' history of plant.

Hupp Adding New Model

DETROIT, March 22—Hupp Motor Car Corp. has announced a new roadster as an addition to the Model S six-cylinder line which was brought out last August. The new model is built in Hupmobile's Cleveland plant. The list price is $1,175 f.o.b Cleveland, with standard equipment which includes five disk wheels and rumble seat. Full custom-equipped types, with two spare wheels mounted in the front fender wells, are obtainable at a slightly higher figure.

Pneumatic Truck Tires Gain

NEW YORK, March 18—The National Automobile Chamber of Commerce finds that economic conditions are anticipating regulatory legislation in ridding the nation's highways of solid-tired motor trucks. Statistics filed with the Chamber reveal that solid tires were standard equipment on only 4.7 per cent of the trucks manufactured in the United States during 1929. In 1921 more than 29 per cent of the trucks were so equipped. Increased speed and lowered maintenance costs, resulting from the use of pneumatic tires, are accredited by the Chamber with this decline.

Willys Shipments Increase

TOLEDO, March 19—Shipments of Willys-Overland for first two weeks of March show 33 1/3 per cent gain over same period in February, according to L. A. Miller, president. Orders on hand indicate that current month will provide 50 per cent gain over February. Commercial car sales are good. Dealers are optimistic for April business. W. T. Holliday, president of the Standard Oil Co. of Ohio, here today, said that Ohio gasoline consumption will increase this year 8 per cent over the 900,000,000 gallons sold in 1929. He looks for steadily increasing business. Willys-Overland is producing 12,000 cars in March.

Holdfast Chain Adding

CEDAR FALLS, IOWA, March 17—The Holdfast Chain Company, formerly of Manchester, manufacturer of auto chains, will erect a one-story factory building, 36 x 60 ft., in this city and transfer its plant here later in the spring, it was announced this week.

Ford Foreign Interests Described at Meeting

Sir Percival Perry Presents Report of English Company

LONDON, March 20—Ford automobiles, manufactured in Manchester, contain less than 20 per cent of imported parts and materials, according to Sir Percival Perry, K. B. E., chairman of the British subsidiary, who made public the annual report of the company here last week. This policy, as well as the plan of hiring domestic labor in each of the associated European and Near East Ford concerns, is becoming more and more general, he said.

The company declared dividends amounting to approximately 10 per cent of the $35,000,000 capitalization, although the large Dagenham plant has not been completed.

"It has been found that in Denmark, where the highest European wages are paid by the company, 'minute' costs are the lowest, and in Belgium, where the Continental wages are the lowest, the 'minute' costs are the highest. The wages in the Antwerp factory, therefore, were increased, and the 'minute' costs were almost immediately reduced, Sir Percival reported.

New and enlarged factories are being built at Rotterdam, Antwerp, and Stockholm. The Istanbul factory, with a 150-car-per-day capacity, has been completed and a large tract at Cologne has been purchased for a plant, which is to be completed during this year.

United Aircraft Reports Net

NEW YORK, March 20—United Aircraft & Transport Corp. reports net income for 1929, the first full year of its operation, of $8,304,782, or $5.42 a share, on the average outstanding common stock. This does not include earnings of subsidiaries acquired subsequent to Jan. 1, 1929. The company reports unfilled orders as of Dec. 31 of $10,783,782, with orders received since that time of $5,482,960.

Rubber Invoiced to U. S.

WASHINGTON, March 18—American consular officers at Singapore, Penang, Colombo, Batavia, Surabaya, Medan, London and Liverpool, who vise invoices on all rubber shipped to the United States from Malaya, Ceylon, Netherland East Indies, and the United Kingdom, report by cable the following amounts of rubber invoiced during the week ended March 15, 1930, as compared to amounts invoiced in 10 preceding weeks:

1930 Week Ended	British Malaya	Ceylon	Netherland East Indies	London and Liverpool	TOTAL
Jan. 4	8,067	1,587	2,419	51	12,124
Jan. 11	7,235	931	1,469	15	9,650
Jan. 18	7,009	898	1,560	49	9,516
Jan. 25	9,212	1,103	2,051	14	12,380
Feb. 1	5,078	1,213	1,679	98	8,068
Feb. 8	9,902	1,788	2,572	31	14,293
Feb. 15	7,223	1,312	1,315	59	9,909
Feb. 22	7,010	1,223	2,389	51	10,673
March 1	8,146	2,315	2,898	57	13,416
March 8	6,637	925	1,990	45	9,597
March 15	6,256	658	1,786	10	8,710

All figures in long tons.

Motor Wheel Corp. Report Reviews Ten Years' Rise

Earnings Since Foundation Placed at $16,775,186

LANSING, March 19—Total net earnings of the Motor Wheel Corp. since its foundation nine years and 10 months ago have amounted to $16,775,186, H. F. Harper, president of the corporation, told stockholders in his annual report. Other excerpts from Mr. Harper's report follow:

"During the past 12 months our list of stockholders has increased from 3609 to 4913—a total increase of 1304 or 36.13 per cent. The greater portion of this increase has taken place since the break in the stock market last October and it seems to reflect the desire of investors to place their funds in safe industrial stocks of a non-speculative type, with a record of consistent earnings and dividends.

"In 1929 our Lansing plants paid to the railroads the sum of $1,140,768.65, as compared to $1,288,496.05 the year previous. This represents 4393 carloads of inbound materials, 4727 cars of outbound, plus approximately 460 carloads of material handled by motor truck, a grand total of 9580 carloads for the year as compared to 9313 cars in 1928.

"Southern plants paid the railroads the sum of $187,922.18, representing 4064 carloads of inbound and 850 cars of outbound material—a total of 4914 carloads as compared to 6008 in 1928. This makes a grand total of material handled of 14,494 cars inbound and outbound throughout the year, an average of 48 cars a day."

Airport Program Set

NEW YORK, March 18—The Second National Airports Conference, to be held in Buffalo, May 14 to 16, will consider eleven topics, each topic to be assigned to a committee selected from the delegates, according to Frederick B. Rentschler, president of the Aeronautical Chamber of Commerce, sponsoring this conference.

The subjects to be considered and discussed are financing and accounting, hangar construction, surfacing and drainage, servicing and storage, lighting, legal and legislative, seaplane and amphibion bases, traffic handling, concessions, sales and advertising and small town airports. Delegates are expected to attend this conference from Canada, Mexico and Central America as well, as well as from all parts of the United States.

Foote Orders Increase

CHICAGO, March 18—Orders on the books of the Foote Brothers Gear & Machine Co. for the first quarter of 1930 exceed those of the same period of last year by 30 per cent, W. C. Davis, president, announced. All plants are operating at capacity and there are sufficient orders on hand to insure production at capacity for the next ninety days, Mr. Davis said.

Annual Report of the General Motors Corp. Reviews Financial and Operating Conditions

NEW YORK, March 20—Pamphlet report of General Motors Corp. for the year 1929, after confirming the earlier earnings statement of $248,282,268, or $5.49 a share on common stock, as compared with $276,468,108, or $6.14 a share for the previous year, reviews the activities of the year both financially and from an operations standpoint.

During the first part of the year the company's stock was split up on the basis of two and one-half shares of new $10 par common for one share of the existing $25 par common. Dividends on the new stock were declared regularly at the rate of $3 per share per annum, and extra dividends of 30 cents per share were paid July 2, 1929, and Jan. 3, 1930, out of the earnings for the year 1929.

After provision for dividends, there was available for reinvestment $82,203,580, as compared with $101,763,350 for the previous year. Capital stock was increased $4,000,000 and surplus increased $95,101,679.

A large part of the surplus funds were used during 1929 for the acquisition of additional properties with the result that net working capital was reduced during the year by $44,500,522 to a total of $251,287,782.

Current assets as of Dec. 31, 1929, were $368,960,945 as against current liabilities of $117,673,163. This compares with current assets for 1928 of $468,809,287 and current liabilities on Dec. 31, of $173,020,983.

There were expenditures during the year on plant additions and acquisitions of additional properties of $142,701,398 financed out of cumulative profits except for the issuance of 40,000 shares of seven per cent preferred stock at a value of $4,865,444 in connection with the acquisition of North East Electric Co.

During the year book value of the investment in General Motors Acceptance Corp. was adjusted to the total of the capital, surplus and undivided profits of that subsidiary at Dec. 31, 1929. Increases in real estate, plant and equipment accounts, amounting to nearly $67,000,000, were made during 1929, partly to bring plant capacity up to earning requirements and partly to broaden the scope of the corporation's manufacturing operations. Increases in plants were in large part regulated to the Chevrolet development and involved increases in the Chevrolet Motor Division and the related Fisher Body operations and foreign assembly plants. It is not anticipated that there will be any substantial increases in capacity during the year 1930.

The most important acquisitions or additions to the corporation's operating properties during the year consisted of an 80 per cent interest in Adam Opel A.G., Russelsheim, Germany, 25 per cent interest in Bendix Aviation Corp., 40 per cent interest in Fokker Aircraft Corp. of America and the complete purchase of McKinnon Industries, Ltd., and North East Electric Co. In addition the corporation has 51 per cent interest in the recently organized General Motors Radio Corp.

The corporation's sales for the year, excluding inter-company items, amounted to $1,504,404,472 as compared with $1,459,762,906 for 1928. The corporation sold approximately 34 per cent of all the cars produced in the United States and Canada.

Through General Motors overseas operations the corporation sold approximately 37 per cent of the total overseas sales of cars and trucks of American and Canadian origin. Net sales overseas were approximately 16 per cent in value of the total sales from all the far-flung operations of the corporation in 1929.

Aluminum Plant Planned

PHILADELPHIA, March 22—According to an editorial article in Chemie et Industrie of Paris for December, 1929, a large plant for producing potash and aluminum from leucite is to be erected with government aid in Italy. It is stated that the processes for treating leucite ore and converting it into potash and aluminum were developed largely by Baron Albert Blanc. It is expected that the plant when completed will make Italy independent of foreign potash and enable it to take a prominent part in the world's aluminum production.

At the plant referred to, which is to be located at Aurelia, the ore will be decomposed by nitric acid, which is produced in Italy by the synthetic process, alumina and potash being formed. The first plant, now under construction, is expected to be ready to begin operations in less than a year, and is laid out for a capacity of 20,000 tons of leucite per year. When the entire plant is completed, the capacity is to be 200,000 tons of potash and 100,000 tons of aluminum per year.

G. E. Employees Rewarded

NEW YORK, March 21—General Electric Co. has announced the award of 37 prizes under the Charles A. Coffin Foundation to employees who have saved money for the company during 1929, or contributed to its efficiency in an unusual degree. Savings have been estimated in nine of these cases and the total figures up to more than $1,250,000 a year. A large number of the recipients of these awards are factory workers and foremen, totaling 24, with 10 in the engineering and laboratory departments and three from the commercial department.

Representative Kelly Hopes for Privilege of House on Price Control Bill

WASHINGTON, March 20—Efforts are being made by supporters of the Kelly-Capper resale price bill to get a special rule from the rules committee of the House so that the measure may be given privileged consideration on the floor of the House some time within the next two or three weeks. Representative M. Clyde Kelly, Republican, Pennsylvania, told *Automotive Industries* that he is hopeful that a special rule will be brought in and said that if it is he is confident that the measure will be passed by the House. He said that it is not probable that it can be considered by the Senate at the present session in view of the legislative jam in the latter branch of Congress.

It is the opinion of both Representative Kelly and Senator Capper, Republican, Kansas, authors of the bill, that it has sufficient strength in both branches to insure its passage. The view, however, is not shared by the strong element in each branch which is opposed to the measure. They have pointed out that it has been before Congress for the past decade and has consequently failed of passage. Proponents assert, however, that the measure has gained much strength through "the process of education of its meaning." It is likely that before the bill is reported to the Senate the Interstate Commerce Committee will hold hearings on the bill.

To support this point they refer to the fact that the bill recently was reported favorably to the House by the Committee on Interstate and Foreign Commerce with no dissenting vote, while in the past when reported favorably there were minority opinions by different committee members. It is a fact, however, that opposition to the resale bill remains formidable both within Congress and without. One of the chief contentions sought to be made against it is that it is in effect a price-fixing measure. Charges are made that it would be in violation of the anti-trust acts. Chain stores are especially strongly opposed to the bill.

Supporters assert that the measure is in no way a price-fixing device or that it would violate anti-trust laws. On the contrary they point out that it provides for the maintenance of a single retail price on standard, trade-marked goods, and that it would prevent ruinous price cutting of such goods, which, it is charged, is often done when the products are put up as "leaders" in connection with sales. Also it is contended that the bill would clear up legal decisions and would in no way encroach upon the anti-trust law. The bill clearly prohibits agreements as to selling prices between producers, wholesalers or retailers, and its proponents assert that it will eliminate cut-throat competiton.

In the conclusion of the report, it was stated:

"And finally, and perhaps most important for the public welfare, the effect of this bill would be to put the small local dealers more nearly on a competitive basis with the great chain store and other combinations. It is generally and properly recognized that the gradual extinction of small independent dealers will be a loss to countless communities throughout the nation, and so to the nation itself. A small independent dealer is identified with the community where his store exists, and who is active in its life as a citizen and taxpayer, is surely more advantageous to that community than a mere selling agency of a foreign concern, which agency has no interest in the community except to make what profit it can from the community."

Crude Rubber Quiet

NEW YORK, March 17—Crude rubber trading was comparatively quiet last week, and price fluctuations were exceedingly narrow, according to F. R. Henderson Corp. Stocks here and abroad, coupled with lack of increase in consumption, had a quieting effect on the market. Stocks in London increased last week to 66,418 tons, and in Liverpool to 20,727 tons.

Ohio Distributing Gas Tax

WASHINGTON, March 20—Distribution of gasoline tax funds for 1930 already has been begun by the State of Ohio, as a means of pushing road work, part of the machinery set up by the state with local authorities for expediting the nation's road and building construction programs. The state auditor during the first week of March made the initial distribution of these funds. The amount distributed was $2,449,502. Each of the 88 counties received $10,000, and each of the nearly 1400 townships $250. The amount sent to municipalities at the first distribution of the year was equal to one dollar for each automobile registered in 1928.

Bosch in Production on Radio

SPRINGFIELD, MASS., March 17—The American Bosch Magneto Corp. has gone into regular production with its automobile radio set, and has 4000 sets scheduled for early delivery completion. A good rate of production is being maintained on magnetos and timers.

Limousine Body Gains

CHICAGO, March 17—Production schedules of Limousine Body Co., of Kalamazoo, Mich., subsidiary of Auburn Automobile Co., are being increased 400 to 500 per cent to keep pace with large renewal orders from Auburn, J. D. Bobb, president, stated today.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for AUTOMOTIVE INDUSTRIES.

NEW YORK, March 19—With the mild weather in most sections of the country last week, there was a slight improvement in wholesale and jobbing trade. The improved weather conditions also aided outdoor employment, while the general trend of employment is reported from several sources to be on the increase. The volume of trade and the level of industrial activity continued below those a year ago.

COMMERCIAL FAILURES

Commercial failures during February totaled 2262, according to R. G. Dun & Co., as against 2759 during the preceding month and 1965 a year ago. The failures in February reached the highest level for any February since 1922.

MERCHANDISE EXPORTS

Merchandise exports during February amounted to $351,000,000, as against $441,752,000 a year ago, while imports amounted to $281,000,000, as against $369,444,000 a year ago. Both exports and imports last month were the lowest since August, 1924.

FREIGHT CAR LOADINGS

Railway freight loadings for the week ended March 1 totaled 899,198 cars, which marks a decline of 79,012 cars below those a year ago and a decline of 60,305 cars below those two years ago.

FISHER'S INDEX

Professor Fisher's index of wholesale commodity prices for the week ended March 15 stood at 90.9, as against 91.0 the week before and 91.9 two weeks before.

BANK DEBITS

Bank debits to individual accounts outside of New York City for the week ended March 12 were 11 per cent below those in the corresponding week last year.

STOCK MARKET

The stock market last week was uncertain. Some specialty issues with a large speculative interest were easily advanced, but the general list of stocks moved irregularly. The volume of trading increased. Call money ranged from 3 to 4 per cent.

BROKERS' LOANS

Brokers' loans in New York City for the week ended March 12 increased $137,000,000, reflecting the higher level of prices.

FEDERAL RESERVE STATEMENT

The consolidated statement of the Federal Reserve banks for the week ended March 12 showed decreases of $43,000,000 in holdings of discounted bills, and of $14,000,000 in holdings of bills bought in the open market. There was an increase of $28,000,000 in holdings of Government securities. The reserve ratio on March 12 was 80.8 per cent, as against 79.8 per cent a week earlier and 78.8 per cent two weeks earlier.

Senate Accepts Tariff in Its Committee Form

No Change in Automotive Items of Current Version

WASHINGTON, March 20 — The Senate, in acting upon the automotive paragraph in the tariff bill, left it unchanged from the form in which it was reported by the Finance Committee and acted upon by the Committee of the Whole. The Senate bill carries a duty of 25 per cent on automobile trucks valued at $1,000 or more, automobile trucks and motor chassis valued at $750 or more, automobile truck bodies valued at $250 or more, motor buses designed for the carriage of more than 10 persons, and bodies for such buses, whether finished or unfinished. On passenger cars, chassis and bodies and motorcycles the duty is 10 per cent, while on parts, except tires and except parts wholly or in chief value of glass, for any of the foregoing products, the duty is 25 per cent.

The House bill continued the present Fordney-McCumber classification and duty, the latter 25 per cent, on automobiles, automobile bodies, automobile chassis, motorcycles and parts, not including tires. The Senate bill broke the paragraph into trucks and buses, and provided a duty of 25 per cent, and into passenger cars, with a duty of 10 per cent, following the unusual suggestion of the automotive industry that the automobile duty be slashed. Under the present law, automobiles, according to a Tariff Commission definition, covers trucks. The Senate also cut out the retaliatory provision, but at least some of the countervailing provisions, if not the one applying to automobiles, likely will be restored.

The belief is that the Senate automotive paragraph will be adopted in conference and therefore become part of the new tariff law.

S.A.E. Plans Celebration

NEW YORK, March 18—The Summer Meeting of the Society of Automotive Engineers will have a comprehensive program in honor of the twenty-fifth anniversary of the foundation of the society, according to plans now being formulated. An exhibit and pageant representing the history of the automobile industry will be presented at French Lick, Ind., with the cooperation of the Smithsonian Institution, the Stevens Institute of Technology, and other agencies owning material which has contributed to the progress of the industry. The dinner at the summer meeting will be a twenty-fifth anniversary dinner, and a special program will be presented at that time. The convention is scheduled for May 25-29, as has been announced previously.

Appoints Airport Committee

NEW YORK, March 17—The American Engineering Council has appointed an airport committee to work in conjunction with the Federal Government, for the purpose of developing a plan of cooperation on securing information for guidance of public bodies in designing airports. Professor Ralph J. Fogg, head of the department of civil engineering in Lehigh University, is chairman of this committee.

Austin Orders Increase

DETROIT, March 17 — C. A. Best, general sales manager of the American Austin Car Co., has just returned from a three weeks' visit throughout the West and the Southwest where he contracted for 14,330 Austin cars, bringing the total number of dealers' orders to approximately 111,000. Mr. Best said that while conditions were somewhat spotty he observed a more pronounced general feeling of optimism than is to be found in the Middle West and East.

A number of the factory executives of the American Austin Car Co. have visited the plant at Butler, Pa., this past week, to complete preparations for getting into production early in May. Installation of machinery in the assembly department is reported as well under way. Among the officials who have visited the plant lately are E. J. Leach, works manager; Thomas McMicken, plant superintendent; E. R. Wegener, purchasing agent, and H. B. McLane, layout engineer, all from the administrative offices in Detroit. T. H. Smaltz, superintendent of maintenance, has been in Butler for several weeks.

Rolls-Royce Net Drops

SPRINGFIELD, March 18 — Net profit for 1929 of $151,419.80, before Federal income taxes, is reported by Rolls-Royce of America, Inc. Credit balance of $564,763.79 on Dec. 31, 1929, compares with $430,000.17 on Jan. 1, 1929. Assets total $7,033,721.73. In his statement President Henry J. Fuller says:

"The operating results of your company for the first nine months were satisfactory, the manufacturing operations being at capacity at both Springfield and Long Island plants. It was anticipated that deliveries in the last quarter of the year would, as usual, add substantially to the previous nine months' results and enable us to reduce our inventory and from the proceeds pay off our current indebtedness. However, the exceptionally adverse conditions which eventuated in October compelled an immediate retrenchment in output with a severe loss in operating results."

Auburn Schedules Increase

AUBURN, IND., March 17—Production schedules of Auburn Automobile Co. have been increased effective this week to 2500 complete cars a month compared with production last month of 1869, R. H. Faulkner, vice-president, said today.

Reo Uses Land for Testing

DETROIT, March 15—The Reo Motor Car Co. is now using a 60-acre tract of land in Lansing, which it purchased nearly two years ago, for testing cars.

Boston Distributor Says Gardner in Merger Deal

Not Permitted to Give Names of Other Factors

BOSTON, March 18—At a conference here a few days ago of Gardner executives and Amos J. Shorey and S. P. Dunham, Gardner distributor for New England, the latter were informed of a pending merger of Gardner and two other companies. President Shorey was not at liberty to give names, but said of the other two, one was a very old manufacturing company building six and eight-cylinder models in low and medium-price fields; the other an eight in the $3,000 to $3,500 class. He said it would give a line of front-wheel-drives in popular and medium-priced field, low and medium-priced sixes and two eights in popular and low-price fields. He said announcement would be given out very soon; probably from St. Louis, but details being worked out at New York.

ST. LOUIS, March 18—Denial that a merger involving the Gardner Motor Car Co. is under way was made here today by Fred W. Gardner, executive vice-president of the company. He stated that he knew nothing about it. Other St. Louis sources are believed to consider that such a move is possible.

DETROIT, March 18—Rumors of a possible merger of the Gardner Motor Car Co., St. Louis, with other companies in the field have coupled the names of Moon Motor Car Co., St. Louis, and New Era Motors, Inc., recently joined to the Moon organization. It is believed that no Detroit companies are involved in the possible merger. The Kissel Motor Car Co. has been advanced by Detroit sources as a possible party to the negotiations.

Motor Products Net Drops

DETROIT, March 17—The report of the Motor Products Corp. for the year ended Dec. 31, 1929, shows net profit of $2,140,848 after interest, depreciation, Federal taxes, etc., equivalent after dividends on $5 preferred stock to $10.42 a share on 197,366 no-par shares of common stock. This compares with $2,643,749 or $19.10 a share before preferred dividend for last year.

Allied Products Earns $801,411

CHICAGO, March 17—Allied Products Corp. in 1929, the first full year of consolidated operation, earned net income of $801,411 or $8.35 a share on the 75,000 shares of Class "B" common stock, after allowing for senior dividends and deducting all charges. This compares with $794,449 or $8.25 a share in 1928.

Wheeler-Schebler Steps Up

CHICAGO, March 18—The Wheeler-Schebler Co., a subsidiary of the Borg-Warner Corp., has increased its production 20 per cent within the last 30 days, due to larger orders received recently, it has been announced.

Construction Projects Are Steady for Industry

March Summary Will Probably Equal February

PHILADELPHIA, March 20 — Although building permits throughout the United States show a general decline for the first two weeks of March, the automotive field shows an activity which promises to keep this type of construction at a level even with the February average.

Reports from *Automotive Industries* correspondents in automotive centers indicate an increase in parts and accessory construction; automobile plant construction and additions have dropped, as compared with the first half of March last year, and as compared with the average level for the first part of 1930. Among the reports received this week were:

United States Rubber Co., New York, has asked bids on contract for six-story addition to plant at Passaic, N. J., to cost $1,000,000 with equipment. Lockwood Greene Engineers, Inc., architect and engineer.

Gerald J. O'Reilly, New York architect, plans multi-story automobile service, repair and garage building, to cost about $140,000 with equipment.

Standard Motor Construction Co., Jersey City, N. J. (Diesel engines), has arranged for increase in capital for expansion.

Theurer Wagon Works, Inc., New York, has awarded contract to J. A. Sarubbi, West New York, N. J., for extensions and improvements in four-story factory at North Bergen, N. J., recently acquired, to cost about $50,000. Company will establish new plant for manufacture of custom motor truck and automobile bodies and will remove to that location.

Acorn Bearing Co., New Britain, Conn., has purchased property for extensions.

Granville Brothers Aircraft Corp., Springfield, Mass., considering construction of plant at Fisk airport, including parts and assembling units to cost over $50,000 with equipment.

Interstate Air Transportation, Inc., Philadelphia, has leased factory at Twentieth St. and Allegheny Ave., totaling 14,000 sq. ft. floor space, for an aircraft plant.

Captain Anton Heinen, Toms River, N. J., aircraft and dirigible builder, leased 39 acres of meadow land from Atlantic City, N. J., and will use portion of site for new plant to manufacture multi-passenger high-powered aircraft, averaging from 80 to 95 ft. long, including parts and assembling departments. Part of tract will also be used for an airport, with hangars, repair shops and other units.

Plans are under way for a reorganization of Bedford Tire & Rubber Co., Bedford, Va., and development of fund of $250,000 to be used in part for improvements at local mill and for operating capital. Plant has been closed for several weeks and it is proposed to resume production soon.

M. J. DeAngelis, Rochester, N. Y., architect, has awarded general contract to Dawson, Syracuse, for automobile service, repair and garage building at Syracuse, to cost about $100,000 with equipment.

Hexcel Radiator Co., Milwaukee, received contract for radiator requirements of American Austin Car Co., Detroit, and in addition to taking more space in present building, will install new equipment costing about $25,000. This is third plant enlargement within a year and increases total area to 100 per cent above a year ago.

Briggs & Stratton Corp., Milwaukee (automobile switches and locks, portable gasoline engines, etc.), has purchased I.X.L. Metal Spring Cover Co., Milwaukee, maker of metal covers for automobile springs, and will transfer production to its own plant, making some additions to equipment.

Chas. A. Olson & Co., Minneapolis, Minn., manufacturer of commercial automobile bodies, is considering construction of one and two-story and basement addition, to cost about $40,000 with equipment, C. J. Bard, Builders' Exchange, architect.

Walker Vehicle Co., Chicago (electric trucks, etc.), awarded contract to E. W. Sproul & Co., for addition to cost about $250,000 with equipment.

City Council, San Antonio, Texas, considering extensions and improvements in municipal airport at Winburn Field, including new hangar units, with repair facilities to cost $250,000.

Magnet Ignition Co., Tulsa, Okla., plans repair and equipment shop, for automobile and other gas engine work.

City Council, Hannibal, Mo., is considering establishment of municipal airport, including hangars, repair shop, oil storage and other field units, to cost about $140,000. City engineer in charge.

Bohn Aluminum & Brass Corp., 2512 East Grand Boulevard, Detroit, plans a new factory group of one and multi-story units, to cost about $1,000,000 with equipment. Bids for initial structure will be asked within 30 days. Christian W. Brandt is architect.

Hill Diesel Engine Co., Lansing, planning expansion, including installation of additional equipment, to cost over $75,000.

Michigan National Guard, Detroit, will soon begin construction of a new hangar, with repair facilities at Wayne County Airport, to cost about $280,000 with equipment. Giffels & Vallet, are engineers.

Willard Storage Battery Co. of California, Inc., Los Angeles, will issue $650,000 in stock, part of fund to be used for general expansion.

National Bronze Adds Furnace

CLEVELAND, March 15—The National Bronze & Aluminum Foundry Company has completed an additional furnace for the production of "Tenual" aluminum by its patented process. The furnace heretofore operated by the company has been in service for the past two years, and the new additional furnace is said to be the largest single unit in the world for the production of aluminum, having a daily capacity of 150,000 lb.

Nearly Billion Planned for Highway Expenditure

To Be Used for New Construction and Maintenance

WASHINGTON, March 20 — The planned expenditure by state highway departments for construction and maintenance of state highways in 1930 is $937,500,455, while a balance of $663,667,000 will be spent on local roads and bridges, so that the road-building program for state and local authorities will aggregate $1,601,167,455, or at least $250,000,000 more than was spent for these purposes in 1929, according to a statement issued by the Bureau of Public Roads, Department of Agriculture, which pointed out that the states and their counties are cooperating with President Hoover in his plea to enlarge all construction programs as much as is practicable to ameliorate the unemployment situation.

The state highway officials of 45 states estimates the total length of roads to be improved by them in 1930 as 32,532 miles, an increase of 3126 miles over the estimate in the 1929 programs. Three states failed to report contemplated mileages for 1930. The highway departments of all states will control the maintenance of 281,393 miles of highways this year, an increase of 32,381 over the mileage under state maintenance in 1929. Gradually, the states are taking over into their systems for maintenance the more important county and local roads of the country. The states of greatest population and industrialization in which unemployment, naturally, is greatest, show the highest contemplated expenditures. The Middle Atlantic States, comprising New York, New Jersey, and Pennsylvania, plan to spend $374,835,310 on improvement of state and local roads. The East North Central States of Ohio, Indiana, Illinois, Michigan and Wisconsin plan to spend $303,696,000.

Plans Petroleum Session

NEW YORK, March 17—A Standard Oil Co. meeting and an industrial meeting arranged in conjunction with the Plainfield Section of the American Society of Mechanical Engineers and the Engineers' Club of Plainfield will be held at Masonic Temple, North Broad Street, Plainfield N,. J., on April 3, at 8.15 P. M. J. W. Sayboldt, manager of the lubricating division of the sales department of the Standard Oil Co. of New Jersey, will be chairman of the meeting. A paper on "Some Aspects of the Petroleum Industry of Interest to the Mechanical Engineer" will be presented by R. T. Haslem, chemical engineer, vice-president and general manager of the Standard Oil Development Co. A second paper on "Stresses in Thick Tubes Subjected to High Pressures and Temperatures" will be read by E. W. Luster, assistant manager of the General Engineering Department of the Standard Oil Development Co.

Ford By-Product Sales Increased During 1929

Greatest Single Increase Was in Scrap Market

DETROIT, March 17—An increase of $2,570,100 in the by-products business of the Ford Motor Co., last year, as compared with 1928, is shown in a report made public by the company today. Sales in 1929 totaled $19,344,773, while in 1928 they were $16,774,672.

The more than $19,000,000 worth of by-products mentioned in the report represent only the sales of the company. In addition, several million dollars' worth of by-products were used in the company's own manufacturing processes. The greatest single increase last year was in the sales of scrap, which amounted to $5,672,000. This is an increase of $2,053,000.

Last year coal valued at more than $2,758,000 was sold, representing production of the company's mines in Kentucky and West Virginia in excess of its own requirements. Coal is shipped by rail to coal dealers in the Middle West, and from the Ford dock at Duluth, Minn., for use in the Northwest.

From coal, the company produced and sold $4,313,000 worth of coke in excess of its own requirements. In the production of the coke, $825,000 worth of ammonium sulphate was obtained and sold through Ford dealer organizations, as a concentrated fertilizer. Light oil was retrieved in the process of making coke, and from it in turn the company produced $2,357,000 worth of motor benzol which was sold.

Autocar Adds Six Wheelers

ARDMORE, PA., March 13—The Autocar Co. has announced three new sizes of six-wheel chassis as additions to its regular line. The wheelbase length of the new Autocars are 290⅞ in., 307⅞ in., and 333⅜ in. They are powered by the Autocar "Blue Streak" six-cylinder, 101 hp. motor, driving through all four rear wheels.

Reo Offers Safety Glass

LANSING, March 19—The Reo Motor Car Co. announces that non-shatterable glass is now available on its sedans in the Model 20 and 25 classification at a slight increase over the standard price.

Coming Feature Issues of Chilton Class Journal Publications

Commercial Car Journal and Operation & Maintenance—Special Truck Equipment Issue, April, 1930.

Rubber Consumption Drops

NEW YORK, March 17—Consumption of crude rubber by all classes of manufacturers in the United States during 1928 is estimated by The Rubber Manufacturers Association at 32,726 long tons. This compares with 41,594 tons in February of last year, and with 36,669 tons in January of this year. Imports during the month are placed at 43,728 long tons, as compared with 64,538 for the corresponding month a year ago, and 47,462 in the preceding month.

Total domestic stocks on hand and in transit overland as of Feb. 28 are estimated at 131,748 tons, as compared with 90,057 on Jan. 31 of this year. Crude rubber afloat on Feb. 28 is estimated at 63,040 tons, as against 75,793 tons a year ago, and 61,863 long tons on Jan. 31, 1930.

Iowa Registrations Gain

DES MOINES, IOWA, March 17—Purchase of 108,341 new passenger cars by residents of this state during 1929, bringing the total registration of all motor vehicles to 790,087, was one new car for each 22 residents during the year, establishing a new high average of car ownership—one for each 3.3 residents. Truck registrations were 69,531; motorcycles and trailers with 718,380 passenger cars, making the grand total of 790,087, the highest registration in the state's history.

Indian Motocycle Using Overtime

SPRINGFIELD, MASS., March 18—The Indian Motocycle Co. has increased its production of motorcycles to the highest point in three years, and is operating several departments overtime. Regular production of its outboard motor has been started by this concern.

Safety Committee Approves Removal of Decrepit Cars

Frequent Inspection of Vital Parts on All Vehicles Urged

WASHINGTON, March 20—The growing necessity of standardized traffic laws and ordinances was emphasized by the Committee on Uniform Traffic Regulations of the National Conference on Street and Highway Safety, while the menace to public safety of derelict automobiles on the streets was pointed out by the Committee on Maintenance of Motor Vehicles of the National Conference, at meeting held here last week. Recommendations covering these problems will be made to the third meeting of the conference in Washington, to be called by Secretary of Commerce Lamont, for the latter part of May.

The Committee on Maintenance of Motor Vehicles reported that old automobiles eventually reach a point when they can no longer be economically kept in a safe condition, and their removal from the highways was held to be an important part of the entire accident prevention program. The committee also urged frequent inspection of vital parts of cars, as a means of promoting safety and reducing the hazards of highway traffic. The causes assigned by the committee as probably the most productive of accidents, from the point of vehicle maintenance, are defective brakes, glaring headlights, defective steering gears and obstructions on the windshields.

Tractor Orders Increase

ROCKFORD, ILL., March 17—A. W. Leland, general manager of the Rockford branch of the J. I. Case Company serving 15 northern Illinois counties, reported 100 per cent increase in this district in sales of tractors, plows, farm tools, cultivators and other machinery during January. The farm equipment companies of the nation reported 61 per cent increase for the period.

Commercial Credit Gets Contract

NEW YORK, March 17—The Commercial Investment Trust Corp. has signed a contract with Consolidated Aircraft Corp. of Buffalo, to act as financing organization for its dealers and distributors.

Calendar of Coming Events

SHOWS

Detroit (All-American Aircraft)..April 5-13
Asbury Park, N. J., Automobile..April 7-12
Berlin, International Automobile..Nov. 6-16

CONVENTIONS

American Society for Testing Materials, Regional Meeting, Detroit.....Mar. 19
Society of Automotive Engineers, (Detroit Section, Body Div.) Book-Cadillac .....Mar. 24
Society of Automotive Engineers, Aeronautic Meeting, Detroit.....April 8-10
Society of Automotive Engineers, Aeronautic Meeting, New York.....May 8
American Society Mechanical Engineers, Fiftieth Anniversary Celebration:
New York .....April 5
Hoboken, N. J. .....April 7
Washington, D. C. .....April 8-9
National Council Meeting of the U. S. Chamber of Commerce, Washington .....April 28
U. S. Chamber of Commerce Annual Meeting, Washington...April 28-May 1
National Foreign Trade Conference, Los Angeles .....May 21-23
A. S. M. E., Semi-Annual Meeting, Detroit .....June 9-12
A. S. M. E., Oil, Power & Gas Div. State College, Pa. .....June 12-14
Society of Automotive Engineers, Summer Meeting, French Lick Springs May 25-29
World Power Conference, Berlin..June 16-25
Railway Supply Mfrs. Assn., Meeting and Exhibit, Atlantic City..June 18-25
American Railway Association, San Francisco .....June 23-26
American Society for Testing Materials, Annual Meeting, Atlantic City .....June 23-27
Steel Founders Soc. (Midsummer Convention) White Sulphur Springs June 26-28
National Safety Council, Annual Safety Congress, Pittsburgh....Sept. 29-Oct. 4
Motor and Equipment Association, Convention, Cleveland.....Nov. 10-14

RACES

Daytona Beach, Fla., Speed Trials, March 15-30
Indianapolis .....May 30
Belgium .....July 5-6
Germany (Grand Prix) .....July 13
Belgium (European Grand Prix)....July 20
Spain .....July 27
Italy (Grand Prix) .....Sept. 7
France (Grand Prix) .....Sept. 21